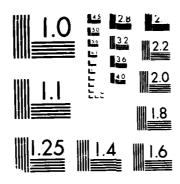
VERTICAL DIRECTIONALITY OF AMBIENT NOISE AT 32 DEG N AS A FUNCTION OF LON. (U) SCRIPPS INSTITUTION OF OCCANOGRAPHY LA JOLLA CA MARINE PHYSIC. N OF THE PROPERTY OF THE PHYSIC PROPERTY AD-8193 228 1/2 UNCLASSIFIED NL



MICROCOPY RESOLUTION TEST CHART



San Diego, California 92152

MARINE PHYSICAL LABORATORY



SCRIPPS INSTITUTION OF OCEANOGRAPHY

VERTICAL DIRECTIONALITY OF AMBIENT NOISE AT 32 °N AS A FUNCTION OF LONGITUDE: Tape #86180

W. S. Hodgkiss and F. H. Fisher



MPL TECHNICAL MEMORANDUM 387-E

MPL-U-32/86

Approved for public release; distribution unlimited.

January 1988

	SSIFICATION OF THIS	PAGE	AND NAME OF THE PARTY OF THE PA				
			REPORT DOCUM				
a. REPORT S UNCLAS	ECURITY CLASSIFICATI SIFIED	ON		16 RESTRICTIVE	MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY				3. DISTRIBUTION / AVAILABILITY OF REPORT			
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE				Approved for public release; distribution unlimited.			
4. PERFORMING ORGANIZATION REPORT NUMBER(S)				5. MONITORING ORGANIZATION REPORT NUMBER(S)			
MPL Te	chnical Memora	ındum 387	-E [MPL-U-32/86]				
6a: NAME OF PERFORMING ORGANIZATION Marine Physical Laboratory			6b. OFFICE SYMBOL	7a. NAME OF MONITORING ORGANIZATION			
			(if applicable) MPL	Office of Naval Research			
ic. ADDRESS (City, State, and ZIP Code)				Departmen 7b. ADDRESS (Cit	t of the Na		
University of California, San Diego					y, State, and ZIP Quincy Str		
Scripps	s Institution	of Oceano	ography	Arlington, VA 22217-5000			
San Die	ego, CA 92152						
8a. NAME OF FUNDING / SPONSORING ORGANIZATION			8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER			
Office of Naval Research			ONR	N00014-84-K-0097 and N00014-87-C-0127			
Bc. ADDRESS (City, State, and ZIP Code)				10. SOURCE OF FUNDING NUMBERS			
Department of the Navy 800 North Quincy Street				PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO	WORK UNIT
Arlington, VA 22217-5000				ECEIVIEIN NO.	100.	'*`	ACCESSION NO.
1. TITLE (Inc	lude Security Classific	ation)				٠	
13a. TYPE OF REPORT		F. H. Fisher 13b. TIME COVERED		14. DATE OF REPORT (Year, Month, Day) 15 PAGE COUNT			
tech memo FROM			10				
	ea Notalion						
:7	COSATI CODES		18 SUBJECT TERMS (Continue on revers	e if necessary an	d identify	by block number)
17 FIELD	COSATI CODES	B-GROUP	18. SUBJECT TERMS (
			ambient noise	e, MPL 27-el			
FIELD	GROUP SU	B-GROUP	ambient noise directionali	e, MPL 27-eld ty			
FIELD	GROUP SU	B-GROUP	ambient noise	e, MPL 27-eld ty			
FIELD	GROUP SU	B-GROUP	ambient noise directionali	e, MPL 27-eld ty			
FIELD	GROUP SU	B-GROUP	ambient noise directionalise and identify by block r	e, MPL 27—eld ty number)	ement verti	cal arr	ay, vertical
FIELD	GROUP SU	e if necessary	ambient noise directionalise and identify by block of the ambient no	e, MPL 27—eld ty number)	ement verti	cal arr	ay, vertical
FIELD 19 ABSTRAC array result	GROUP SU T (Continue on reverse Measurements have at 32 N (124 V) ts for the MPL 27-	ve been ma V, 136 W,	ambient noise directionalise and identify by block of the ambient no and 150 W. This tertical array Tape #8	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape	ement verti	dal arr	ertical nalysis
FIELD 19 ABSTRAC array result (appr	GROUP SU T (Continue on reverse Measurements ha es at 32 N (124 N ts for the MPL 27- eximately 1700 nr	ve been ma V. 136 W, relement ve mi due west	ambient noise directionalise and identify by block of the ambient no and 150°W). This te	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape	ement verti	dal arr	ertical nalysis
FIELD 19 ABSTRAC array result (appr	GROUP SU T (Continue on reverse Measurements have at 32 N (124 V) ts for the MPL 27-	ve been ma V. 136 W, relement ve mi due west	ambient noise directionalise and identify by block of the ambient no and 150 W. This tertical array Tape #8	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape	ement verti	dal arr	ertical nalysis
FIELD 19 ABSTRAC array result (appr	GROUP SU T (Continue on reverse Measurements ha es at 32 N (124 N ts for the MPL 27- eximately 1700 nr	ve been ma V. 136 W, relement ve mi due west	ambient noise directionalise and identify by block of the ambient no and 150 W. This tertical array Tape #8	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape	ement verti	dal arr	ertical nalysis
FIELD 19 ABSTRAC array result (appr	GROUP SU T (Continue on reverse Measurements ha es at 32 N (124 N ts for the MPL 27- eximately 1700 nr	ve been ma V. 136 W, relement ve mi due west	ambient noise directionalise and identify by block of the ambient no and 150 W. This tertical array Tape #8	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape	ement verti	dal arr	ertical nalysis
FIELD 19 ABSTRAC array result (appr	GROUP SU T (Continue on reverse Measurements ha es at 32 N (124 N ts for the MPL 27- eximately 1700 nr	ve been ma V. 136 W, relement ve mi due west	ambient noise directionalise and identify by block of the ambient not and 150°W). This tertical array Tape #8 of San Diego) on 5 %	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape	ement verti	dal arr	ertical nalysis
FIELD 19 ABSTRAC array result (appr	GROUP SU T (Continue on reverse Measurements ha es at 32 N (124 N ts for the MPL 27- eximately 1700 nr	ve been ma V. 136 W, relement ve mi due west	ambient noise directionalise and identify by block of the ambient no and 150 W. This tertical array Tape #8	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape	ement verti	dal arr	ertical nalysis
array result (appropries when we have the week to be a second to b	GROUP SU T (Continue on reverse Measurements haves at 32 N (124 V) ts for the MPL 27- coximately 1700 nr	ve been ma V, 136 W, element ve ni due west kts.	ambient noise directionalise and identify by block of the ambient not and 150°W). This tertical array Tape #8 of San Diego) on 5 %	e, MPL 27—ele ty Dise field between echnical report of 6180. The tape May 1986 beginn	ement verti	fz with vermplete at 32°N.	ertical nalysis
array result (appropried the w	GROUP SU T (Continue on reverse Measurements ha rs at 32 N (124 V ts for the MPL 27- coximately 1700 nr yind speed was 10	ve been ma V. 136 W, element ve mi due west kts.	ambient noise directionalise and identify by block of the ambient not and 150°W). This tertical array Tape #8 of San Diego) on 5 M	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape May 1986 beginn	ement verti	fz with vermplete at 32°N.	ertical nalysis
array result (appropriate with the wind	GROUP SU T (Continue on reverse Measurements haves at 32 N (124 V) ts for the MPL 27- coximately 1700 nr	ve been ma V. 136 W, element ve ni due west kts. OF ABSTRACT	ambient noise directionalise and identify by block of the ambient not and 150 W. This tertical array Tape #8 of San Diego) on 5 M.	e, MPL 27—ele ty number; Dise field between echnical report of 6180. The tape May 1986 beginn	ement verti	dz with verificat 32 N. PDT. At	ertical nalysis 150°W that time,

Vertical Directionality of Ambient Noise at 32 °N as a Function of Longitude:

Tape #86180

W.S. Hodgkiss and F.H. Fisher

Marine Physical Laboratory Scripps Institution of Oceanography San Diego, CA 92152

Abstract

Measurements have been made of the ambient noise field between 25 and 300 Hz with vertical arrays at 32 °N (124 °W, 136 °W, and 150 °W). This technical report contains the complete analysis results for the MPL 27-element vertical array Tape #86180. The tape was recorded at 32 °N, 150 °W (approximately 1700 nmi due west of San Diego) on 5 May 1986 beginning at 10:09 PDT. At that time, the wind speed was 10 kts.

I. Introduction

This technical report contains the complete analysis results for the MPL 27-element vertical array Tape #86180. The tape was recorded at 32 °N, 150 °W (approximately 1700 nmi due west of San Diego) on 5 May 1986 beginning at 10:09 PDT. At that time, the wind speed was 10 kts.

A complete description of the experiment and data analysis procedure is given in the summary technical report (TM-387-A). Here, a brief guide will be provided to the results documented in the the various sections.

Section II (Preliminary Analysis) provides a preliminary look at the data quality from 4 hydrophones spaced approximately equally across the array for the first data segment (65536 points). The results are ordered as follows:

- (1) Channel means (A/D counts).
- (2) Time series (A/D counts) for the first 1024 points of the first segment.
- (3) Time-varying mean (A/D counts, 64-point averages).
- (4) Time-varying power (A/D counts squared, 64-point averages) (channel means have been removed).
- (5) Power spectra (dB// μ Pa/ $\sqrt{\text{Hz}}$) (channel means have been removed).

Section III (Power Spectra) provides an extended preliminary look at the power spectra from all hydrophones in the array for the first data segment (65536 points). The results are ordered as follows:

- (1) Channel means (A/D counts).
- (2) Power spectra (dB// μ Pa/ $\sqrt{\text{Hz}}$) (channel means have been removed).

Section IV (Array Response: Waterfall, KB Window) provides waterfall plots of the time-evolving vertical directionality of ambient noise for successive segments (65536 points) across the entire data tape (dB// μ Pa/ \sqrt{Hz} Deg). A Kaiser-Bessel window ($\alpha = 1.5$) was used to amplitude shade the array elements.

Section V (Array Response: Waterfall, Rect Window) provides waterfall plots of the time-evolving

p-1

v Codes

Sales tal

vertical directionality of ambient noise for successive segments (65536 points) across the entire data tape ($dB//\mu Pa/\sqrt{HzDeg}$). A rectangular window was used to amplitude shade the array elements.

Section VI (Array Response: Panels, KB Window) provides multi-panel plots of the time-evolving vertical directionality of ambient noise for successive segments (65536 points) across the entire data tape (dB// μ Pa/ $\sqrt{\text{HzDeg}}$). A Kaiser-Bessel window ($\alpha = 1.5$) was used to amplitude shade the array elements.

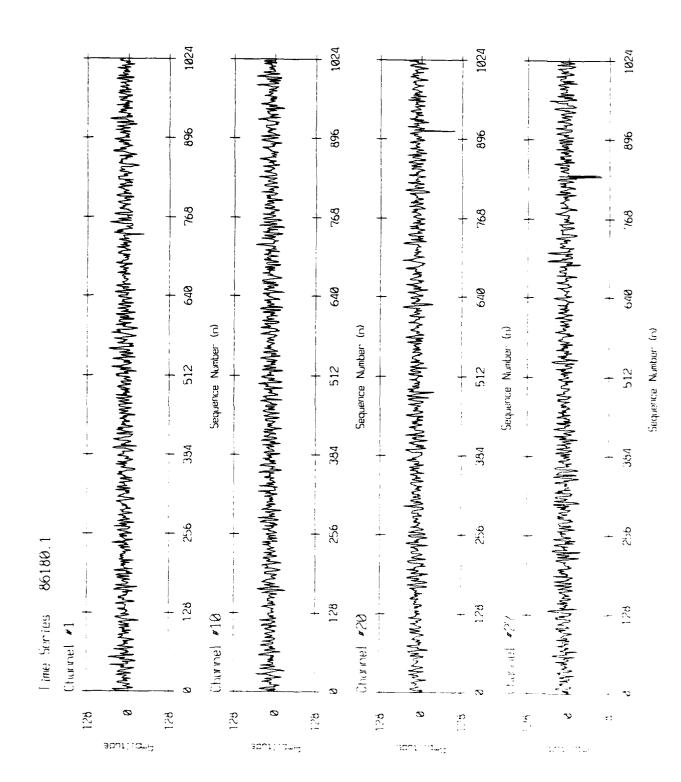
Section VII (Array Response: Panels, Rect Window) provides multi-panel plots of the time-evolving vertical directionality of ambient noise for successive segments (65536 points) across the entire data tape $(dB//\mu Pa/\sqrt{HzDeg})$. A rectangular window was used to amplitude shade the array elements.

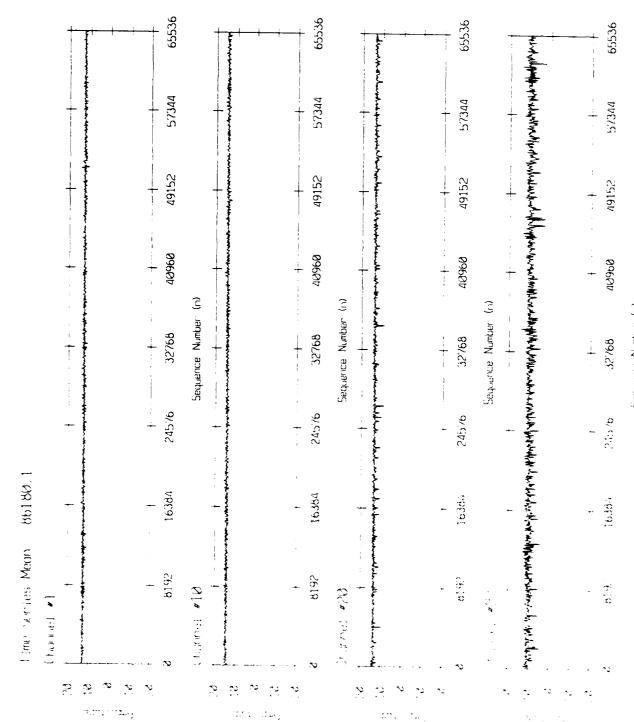
AND THE PROPERTY OF THE PROPER

II. Preliminary Analysis.

AND THE PROPERTY OF THE PROPER

Channel #1 1 12.884033203125 Channel #10 1 14.558151245117 Channel #20 1 13.688034057617 Channel #27 1 10.018585205078

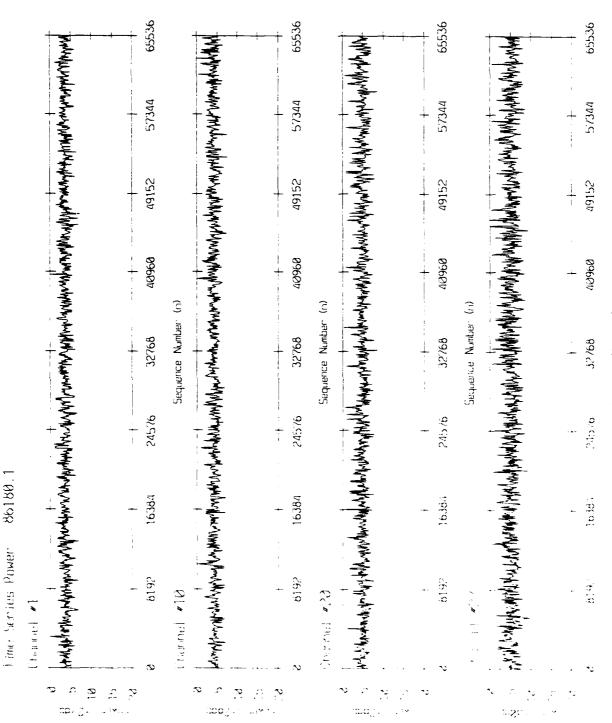




The second of the second

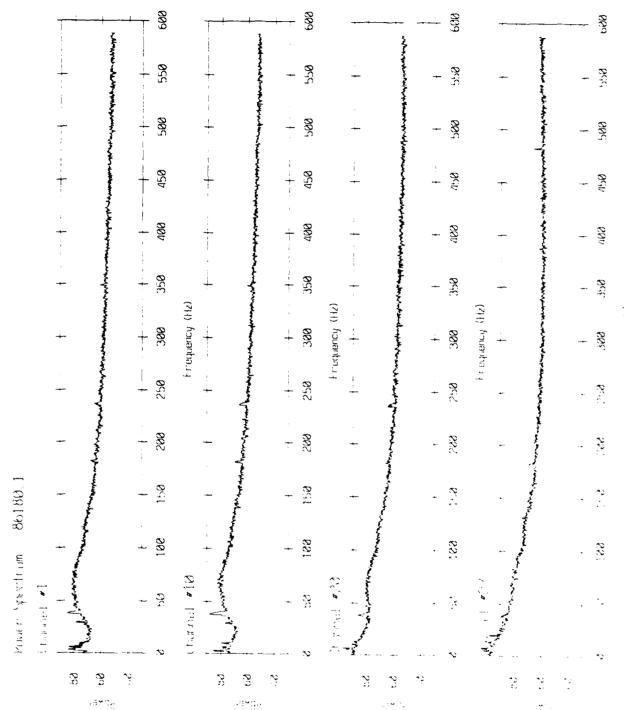
SESSESSION STREET, SALVEN CONTRACTOR OF THE SESSION OF THE SESSION

Sequence Number (n)

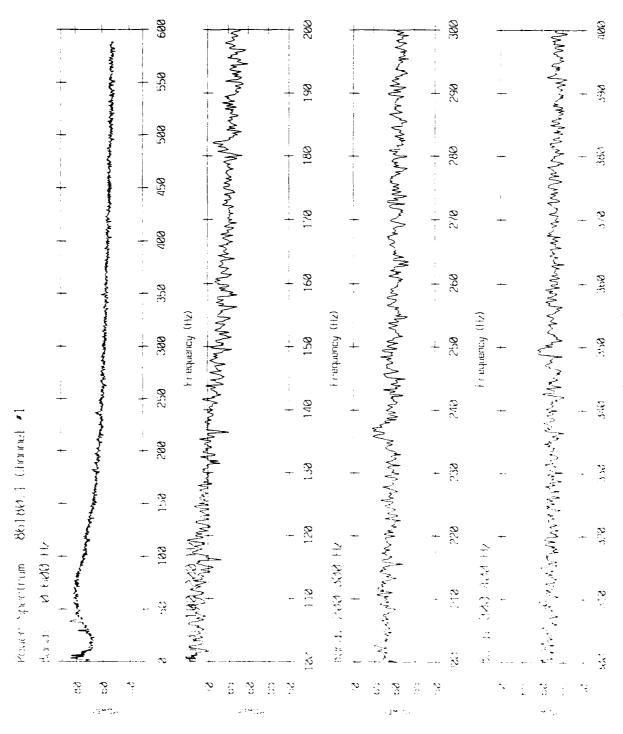


Suggestion Number (n)

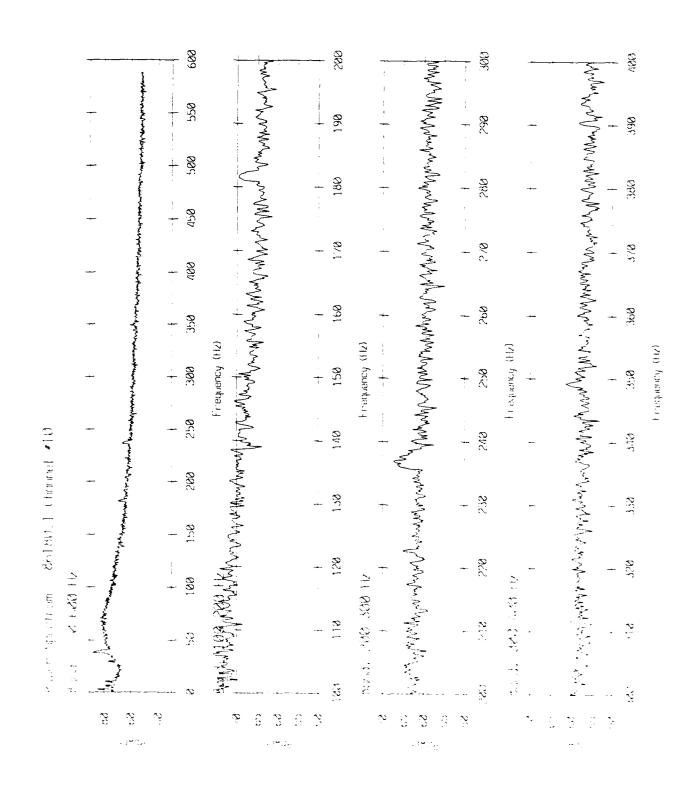
... 2225551 725553



Chaptering VIVI

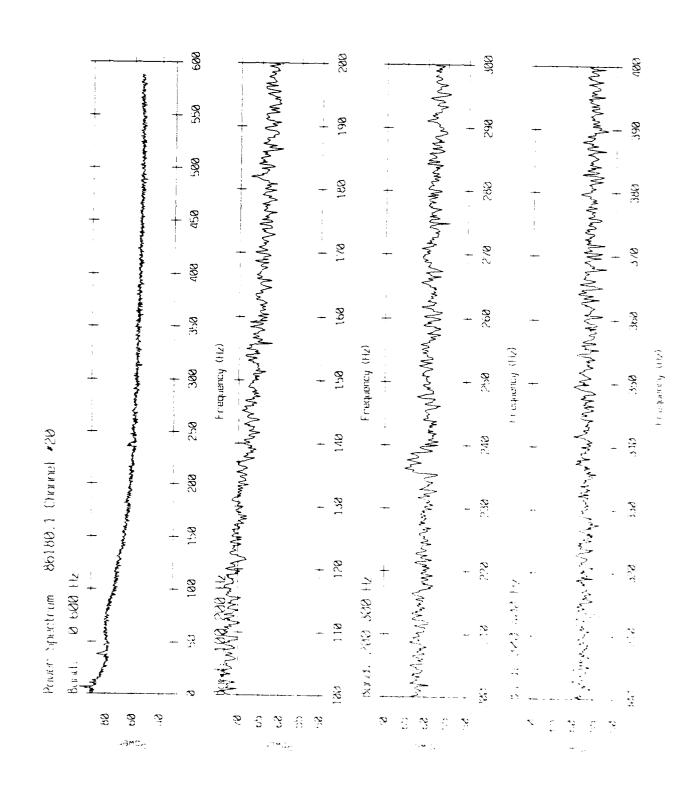


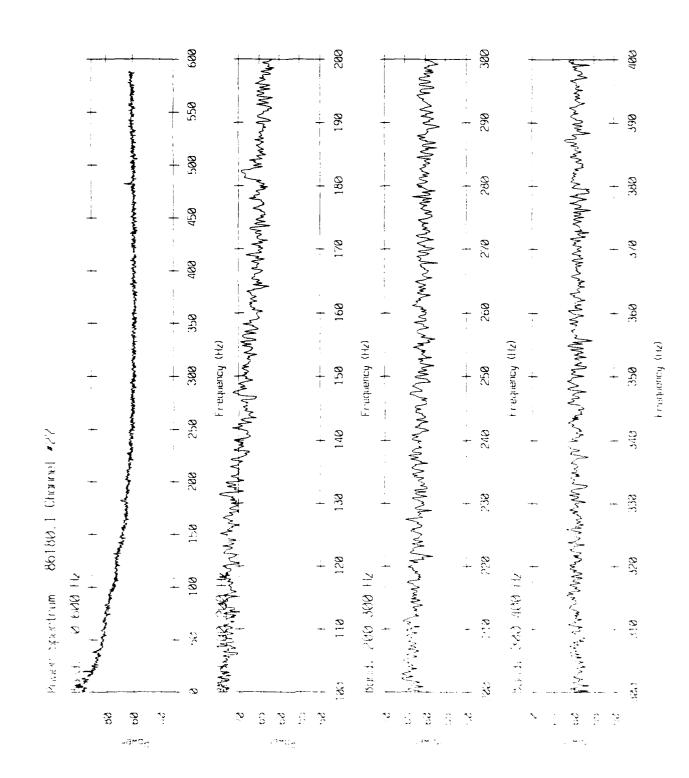
Enapsiery (112)



בהינים הינונים

Charles and Charles and Charles

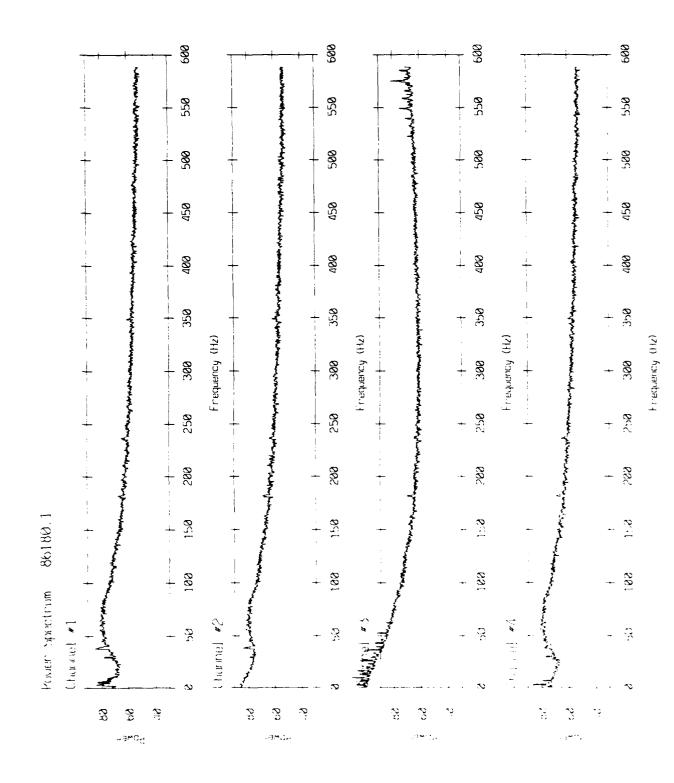




III. Power Spectra.

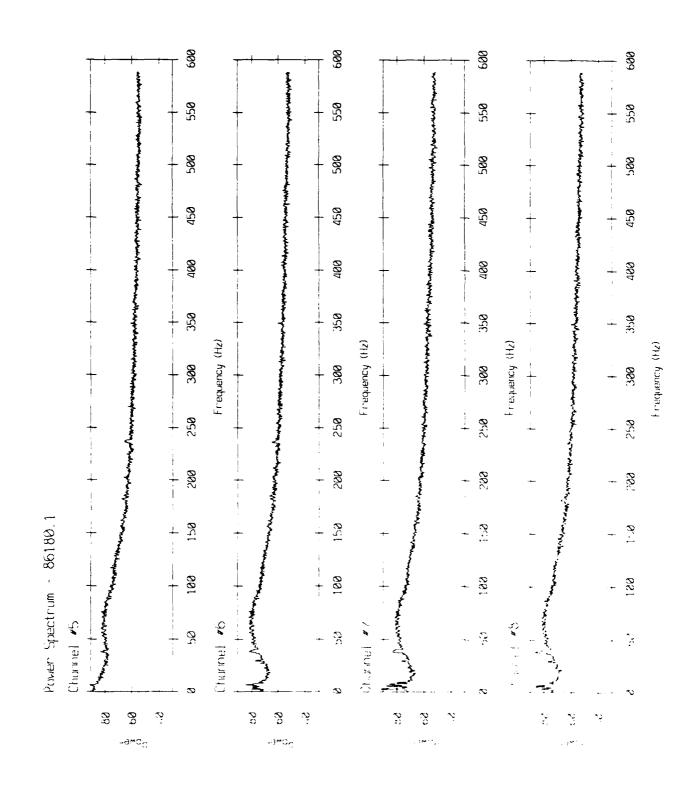
ASSESSED TO THE PROPERTY OF TH

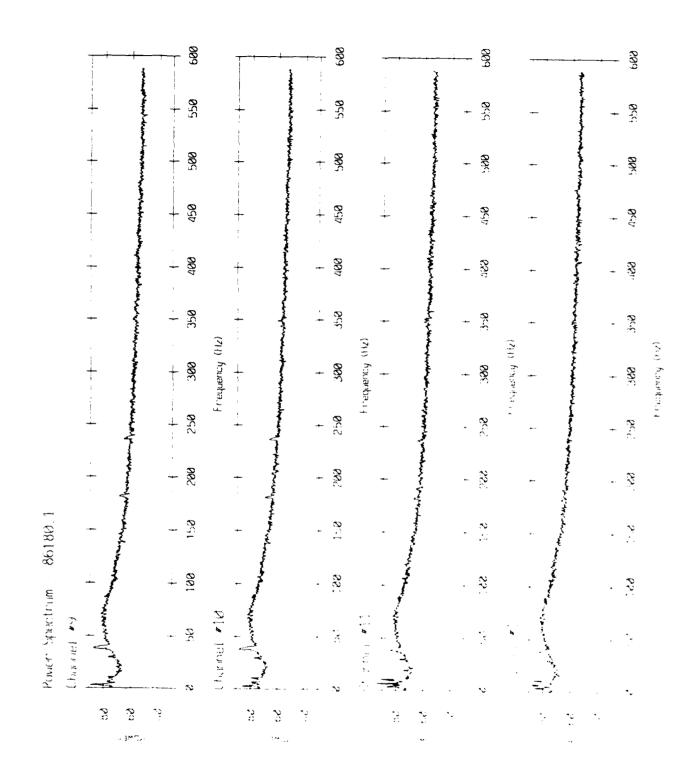
Channel #1 1 12.884033203125 Channel #2 1 11.481094360352 Channel #3 1 11.441101074219 Channel #4 1 10.964447021484 Channel #5 1 12, 799743652344 Channel #6 1 9.9159605712591 Channel #7 1 14 751235961914 Channel #8 1 14.947845458984 Channel #9 1 6.4825439453125 Channel #10 1 14.558151245117 Channel #11 1 10.523478535156 Channel #12 1 14.188262939453 Channel #13 1 11.582733154297 Channel #14 1 13.047485351563 Channel #15 1 12,429428100588 Channel #16 1 8.7006225585938 Channel #17 1 13.108627319336 Channel #18 1 12.799850463867 Channel #19 1 11.199249267578 Channel #20 1 13.688034057617 Channel #21 1 12.560836791992 Channel #22 1 14.641799926758 Channel #23 1 -2.2512054443359 Channel #24 1 11.429229736328 Channel #25 1 13.618255615234 Channel #25 1 14.084578369141 Channel #27 10.018585205073

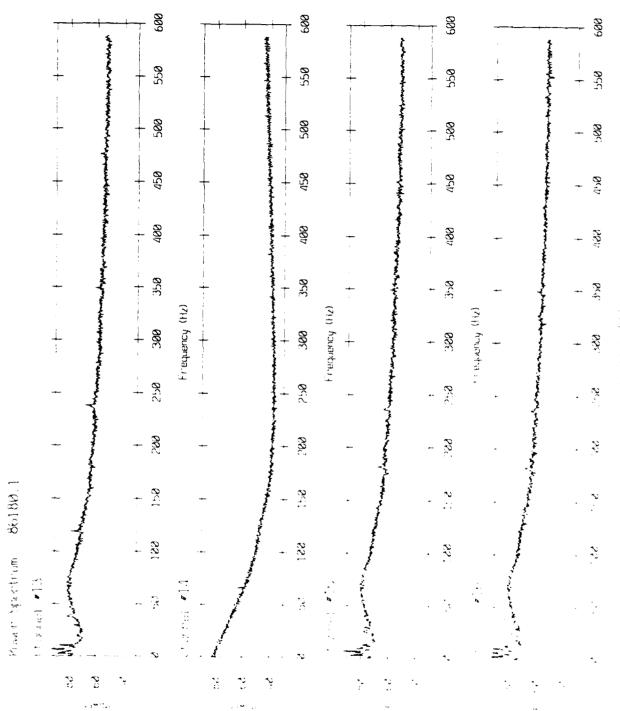


PARTY INTERESCENCE CONTRACTOR CON

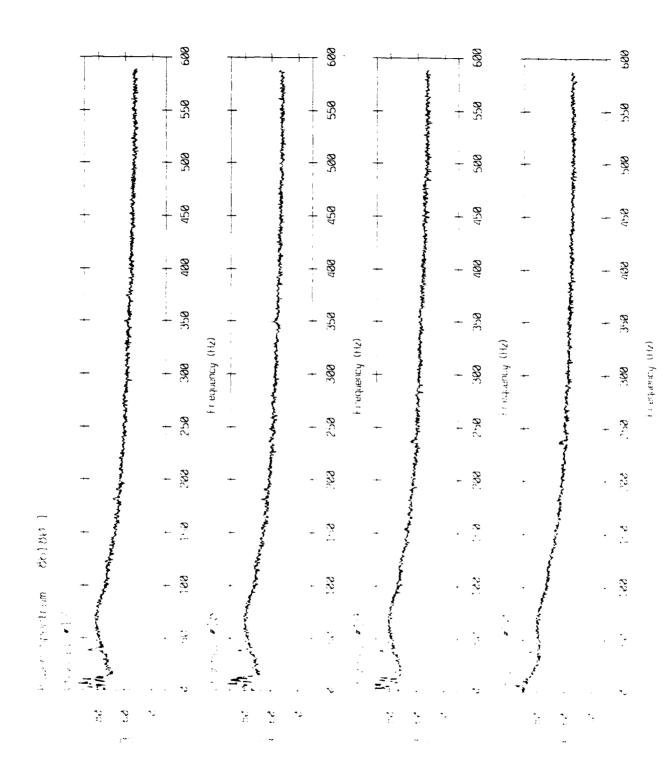
POTOTOTO POR PORTOTO DE LA POR







Can Konarton



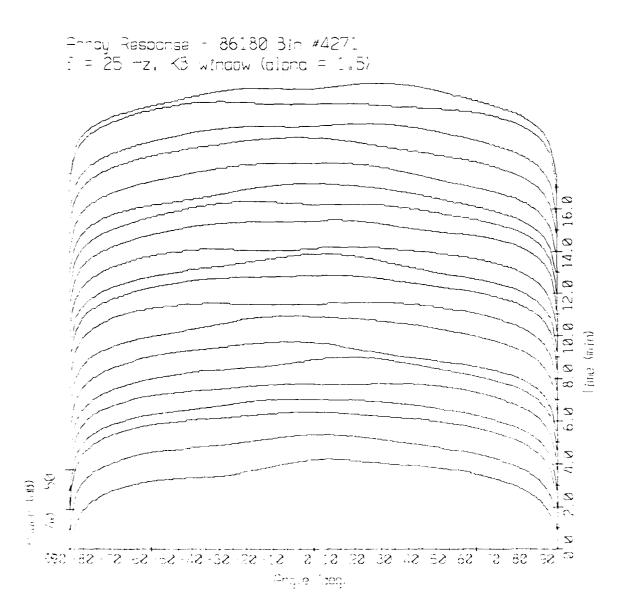
STREET MISSISS AND THE STREET

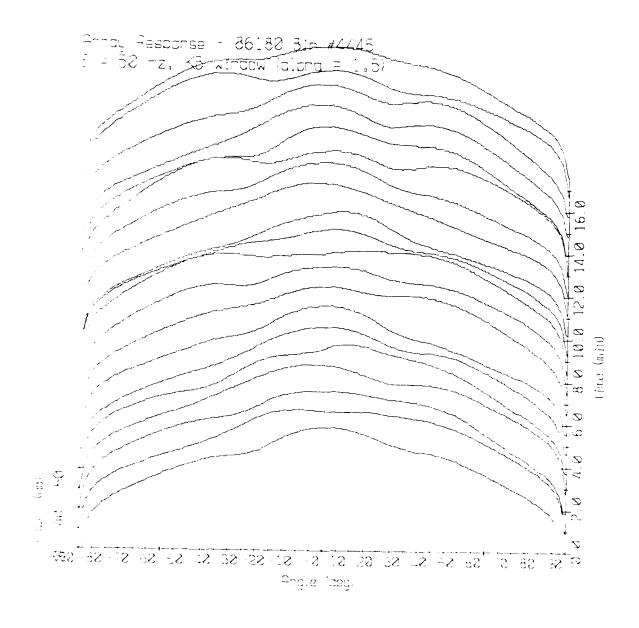
Care fraction and a care

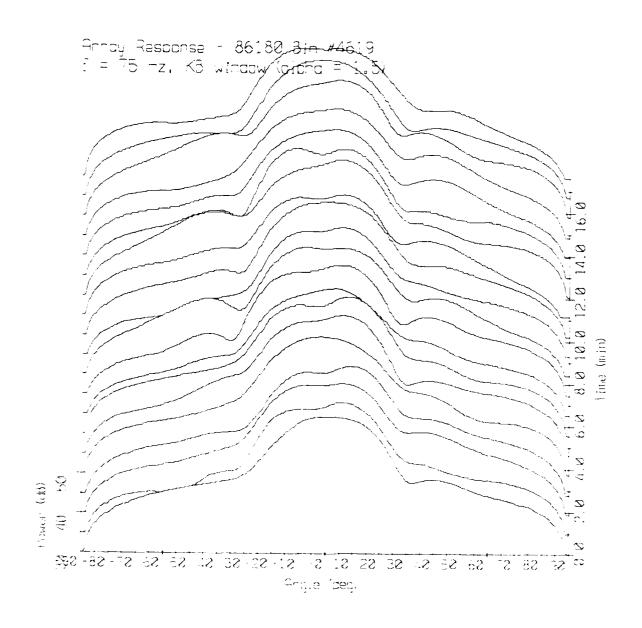
.5**4**0,,

Frequency (Hz)

IV. Array Response: Waterfall, KB Window.

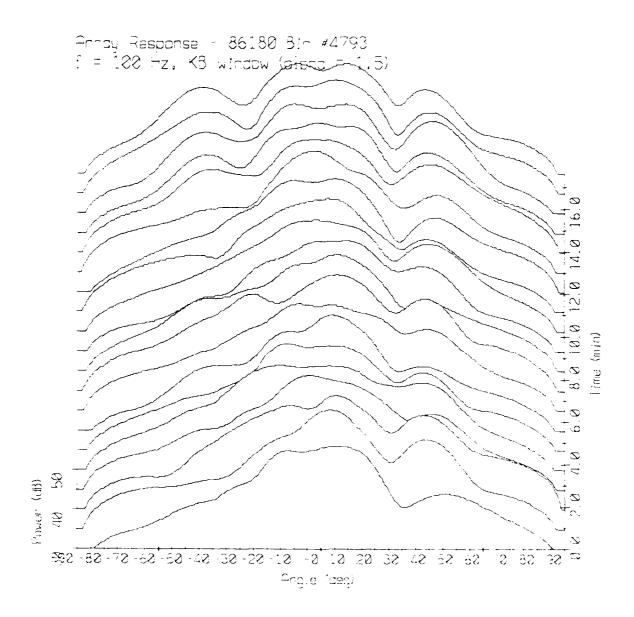






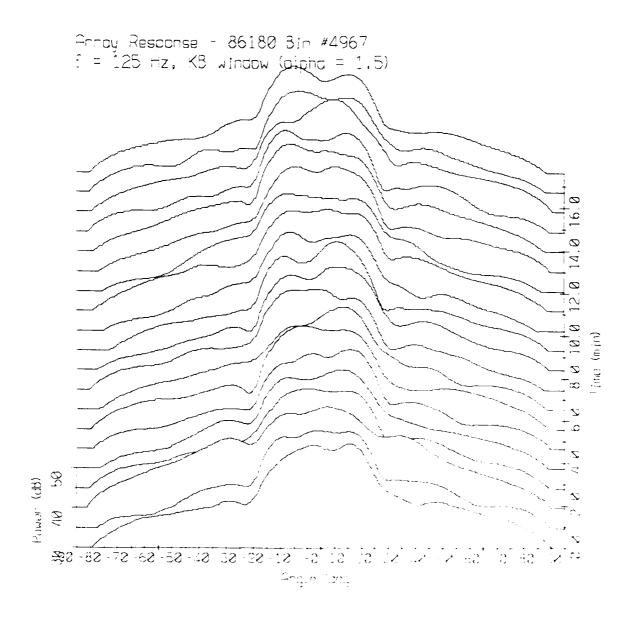
ANTOSSAR MADIANNAN KONDONNA FUCCOSAN

Trescond School Street

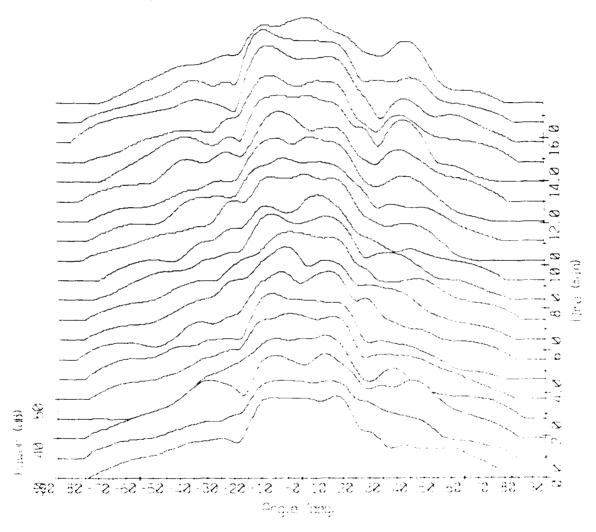


TOSCOLARIA DIDIDIDA, LUKASSUSA TASCASSA MAGAGAS

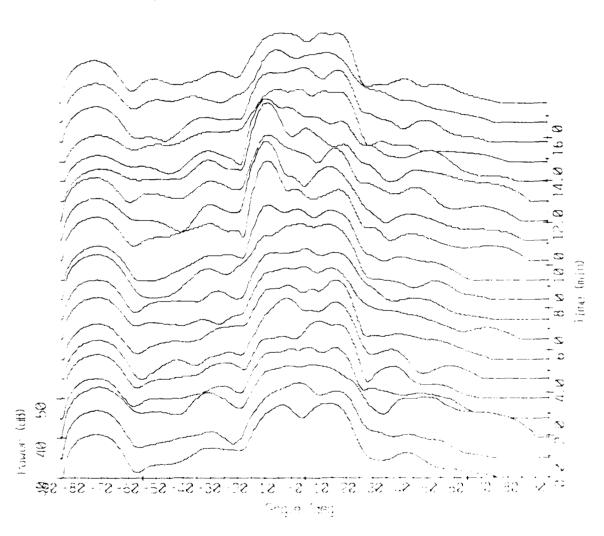
CANAL SERVICE



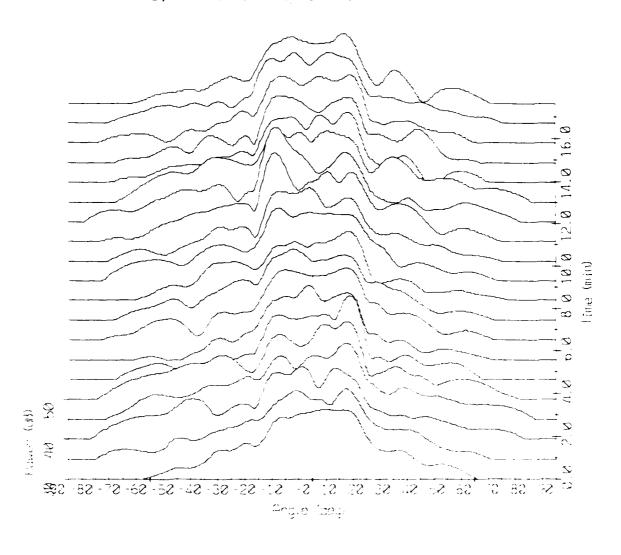
Annay Response - 86180 Bin #5141 E = 150 mz, KB window (dipna = 1.5)



Annoy Response - 86180 3in #5316 f = 175 mz, K3 window (along = 1.5)



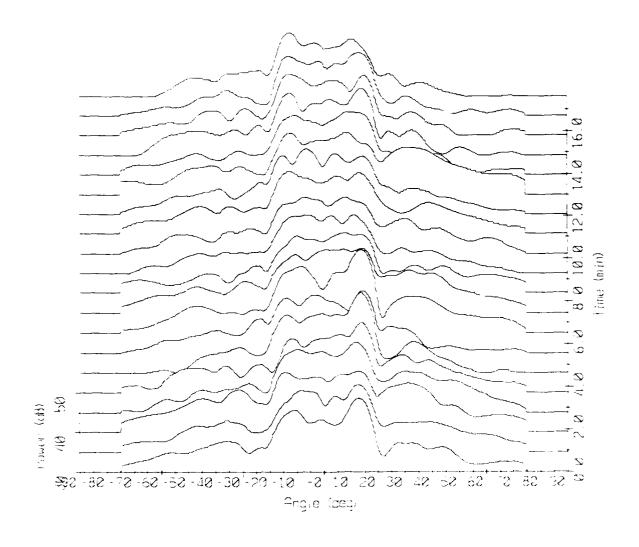
Annay Response - 86180 Bin #5490 [= 200 mz, K3 winapw (alpha = 1.5)



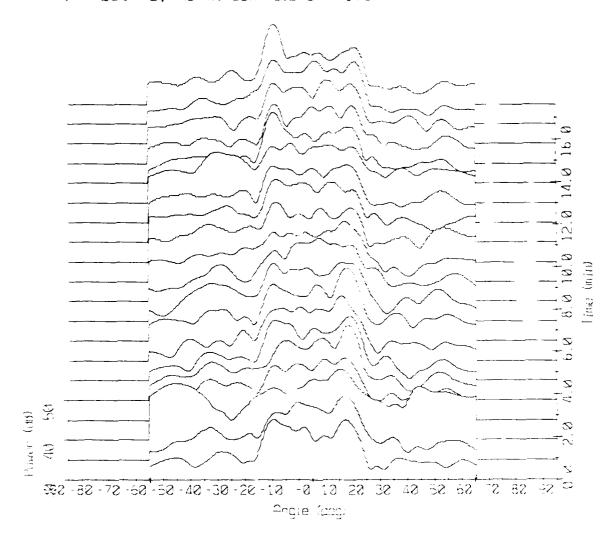
SAL SSSSSS TREESERVICE SESSON SSSSSSSTEEDSSSSSSSTEETS

Phroy Response - 86180 3;n #5664 f = 225 mz, K3 window (dipha = 1.5)

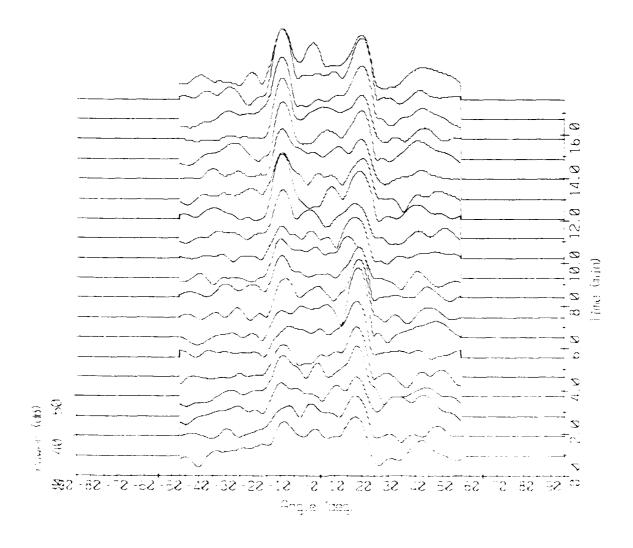
property assesses accepte accepted accepted assesses



Annay Response - 86180 3in #5832 E = 250 Hz, KB window (aland = 1.5)

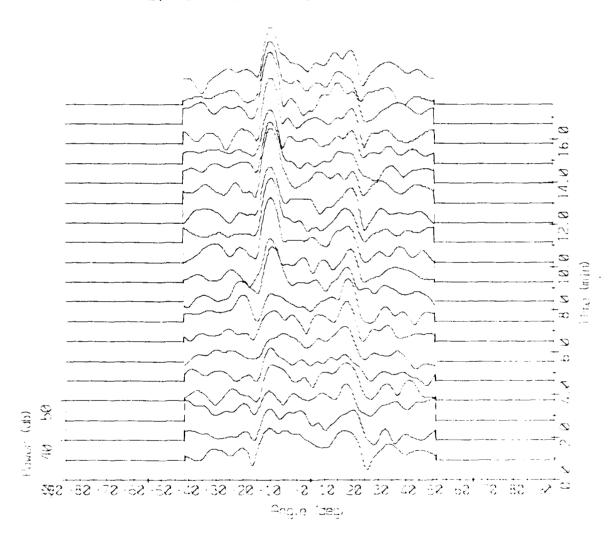


Annoy Response - 86180 Bin #6012 E = 275 mz, KB window (alpha = 1.5)

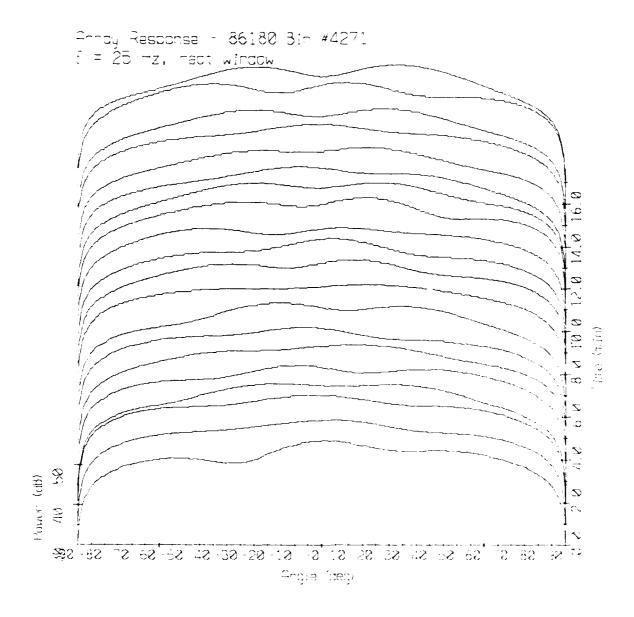


Findy Pasponse - **86180** Bin #6186 f = 300 mz. K5 window kalana = 1.5)

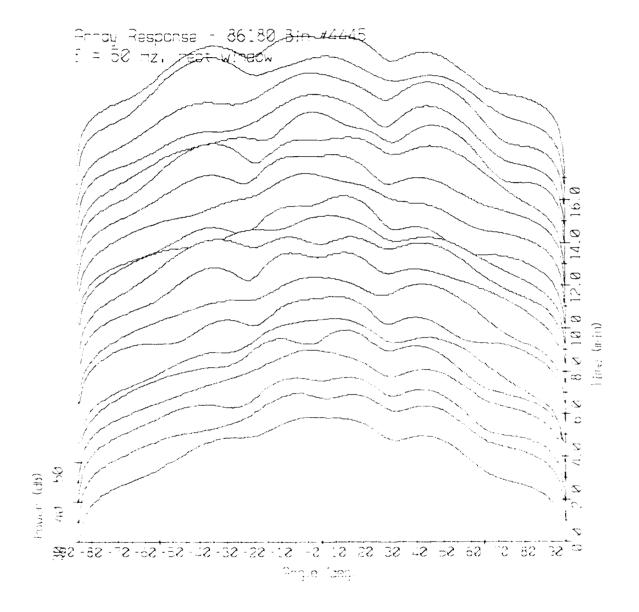
THE CONTROL OF THE PROPERTY OF



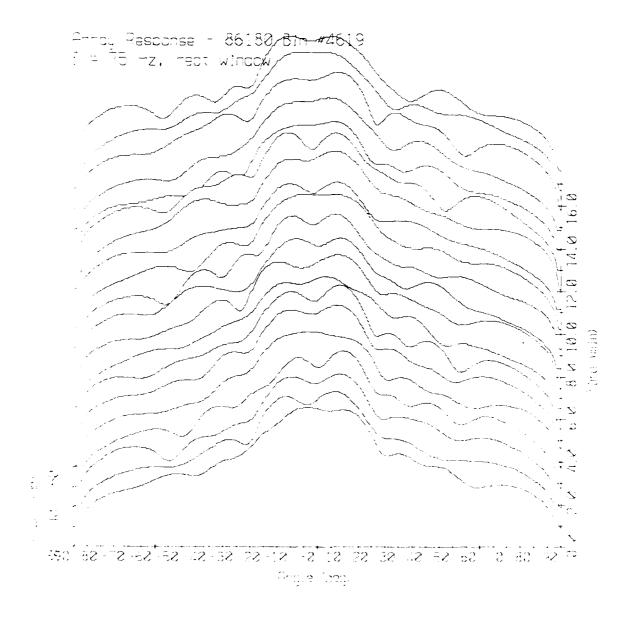
V. Array Response: Waterfall, Rect Window.

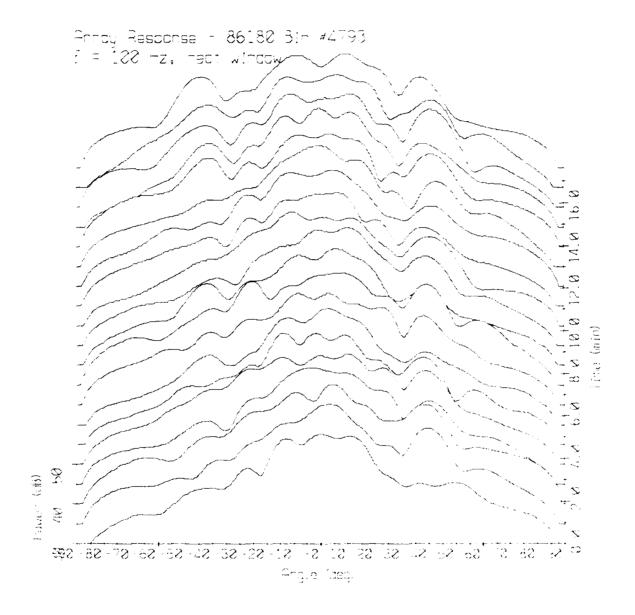


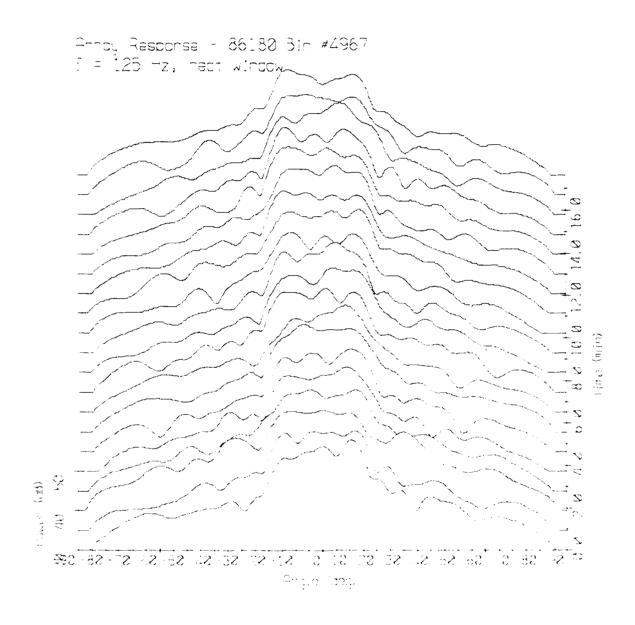
specific terrester described lessesses becomes becomes



ASSACRA PROGRAM RESPONDE RESPONDE PROGRAMMENT CONTRACTOR PROGRAMMENT RESPONDED FOR THE PROGRAMMENT OF THE PR

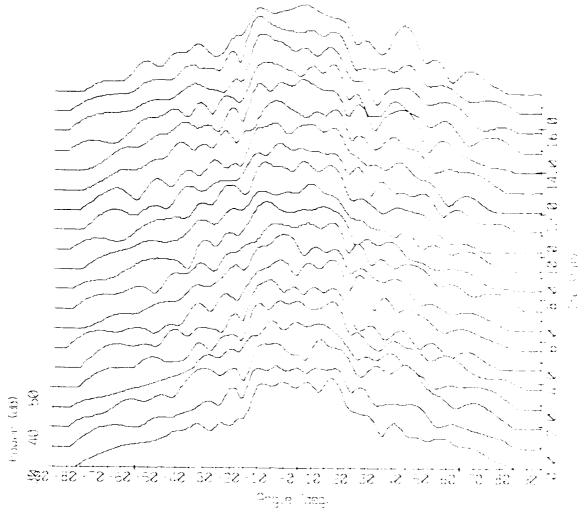






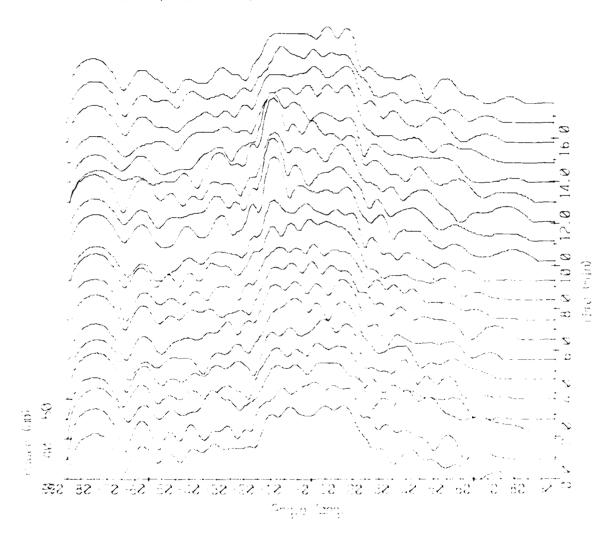
AND THE PROPERTY OF THE PROPER

Annay Response - 86182 3th #5141 f=158 mz, rept window

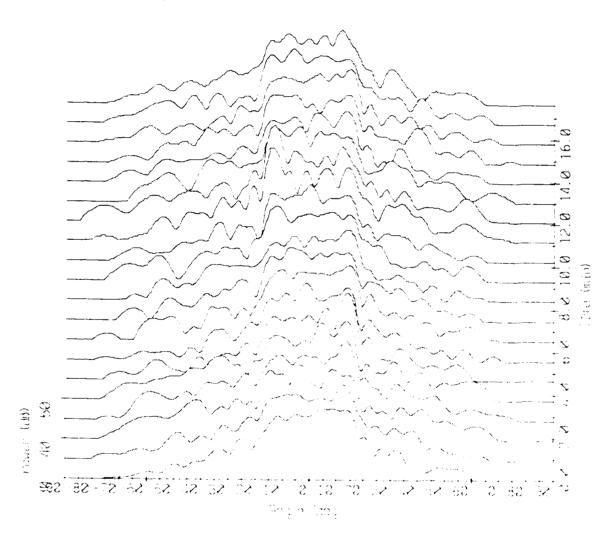


Annoù Response - 86180 3:n #5316 E = 175 mz, nept window

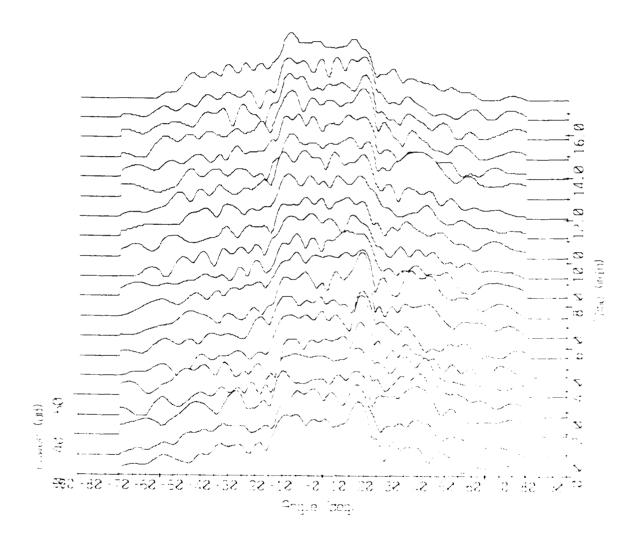
endere estere appropria especial appropria appropria



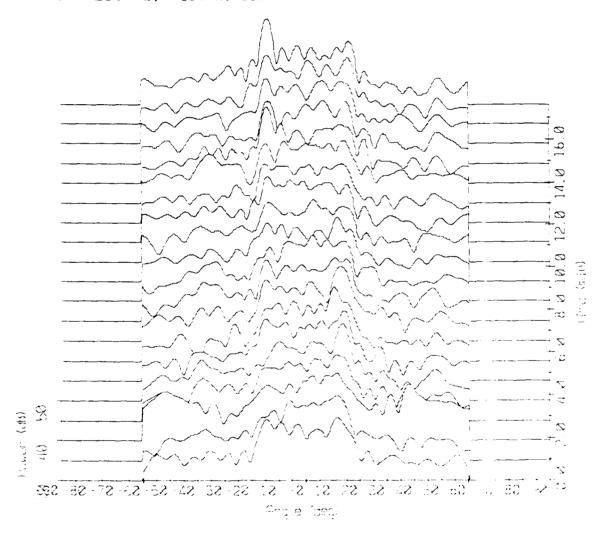
Annay Response - 86180 3in #5490 f = 200 mz, nect window



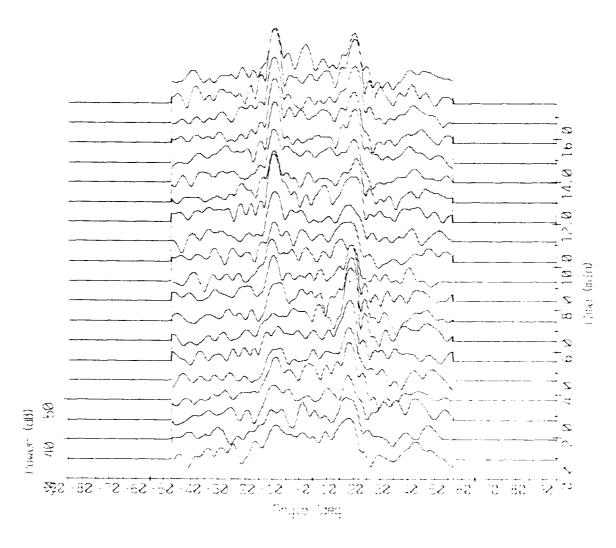
Annay Response - 86180 Bin #5664 f = 225 hz, rect window



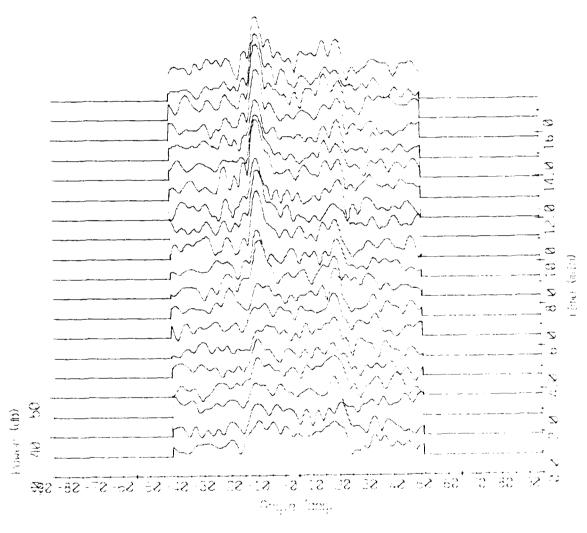
Arroy Response - 86180 Bin #5832 f = 250 Hz, rect window



Annoy Response - **86180** Bin #6012 f = 275 Hz, nept window

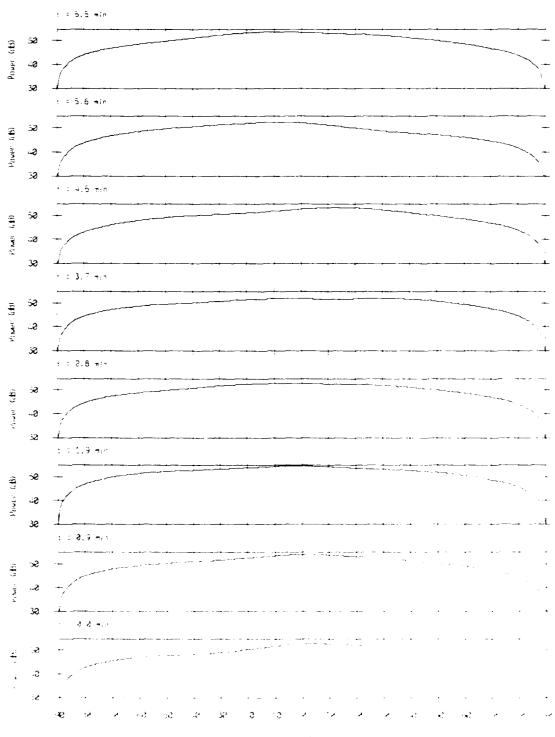


Annay Response - 86180 Bin #6186 f = 380 Hz, nect window



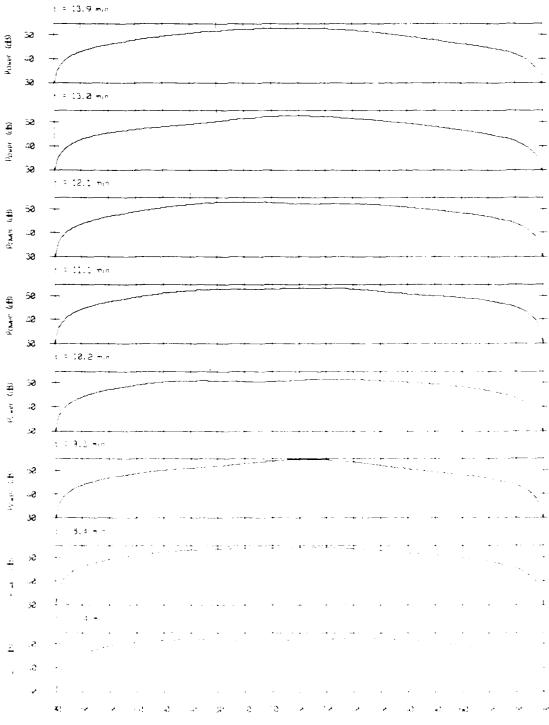
VI. Array Response: Panels, KB Window.

Annay Response - 86182 3:h #4271 f = 25 - z, K3 window (alana = 1.5)



andalara andalara, societe especies regession especies discosta discosta especialista especial de la constante

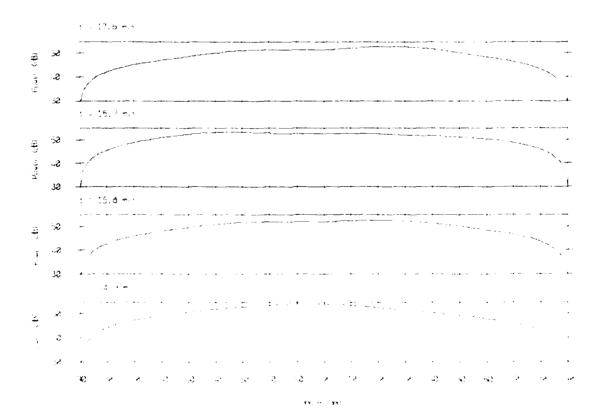
Annay Response - 86180 3:n #4271 f = 25 - z, KB window (a.cnc = 1.5)



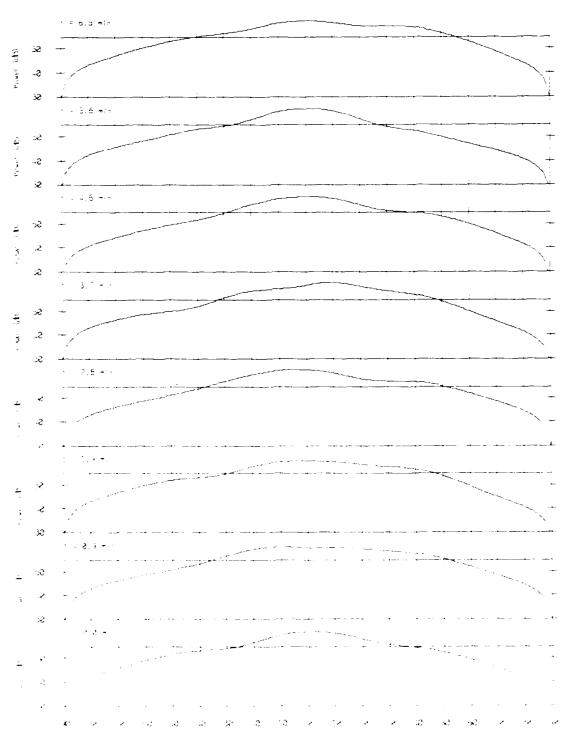
Principles Reserved

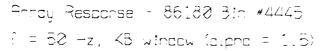
Annay Response - 86180 3in #4271 £ = 25 -z, K8 window (cupno = 1.5) TOTAL PROGRAM VINESCON PROGRAM PROGRAM

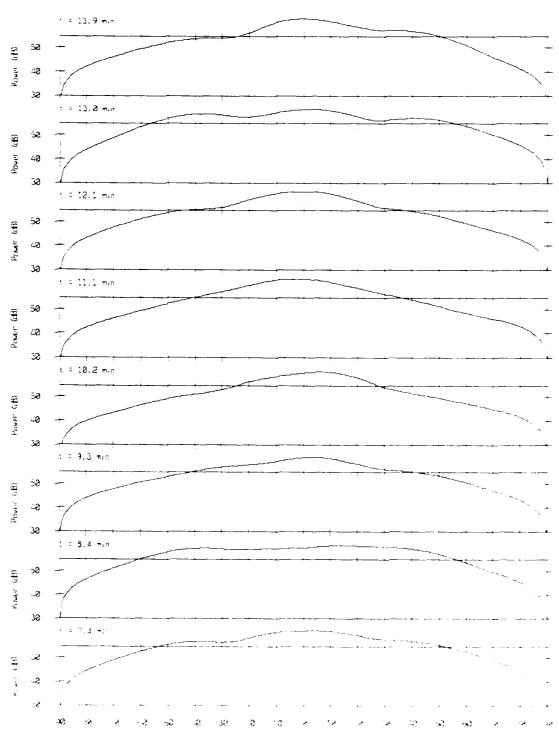
SESSESSES MASSISSES ASSESSES ASSESSED TESTSESSES MASSISSES



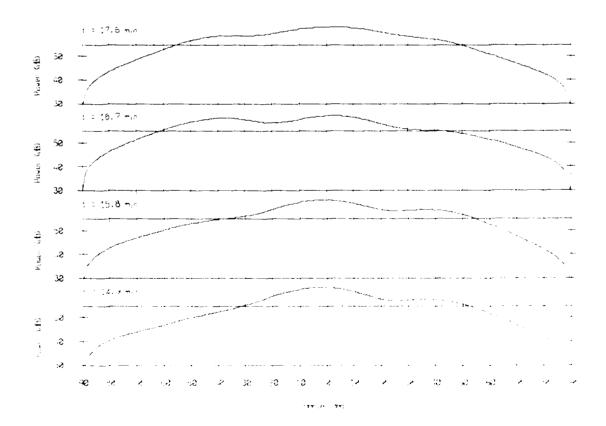
Annay Response - 86180 3in #4445 £ = 50 Hz. <5 window (dicho = 1.5)





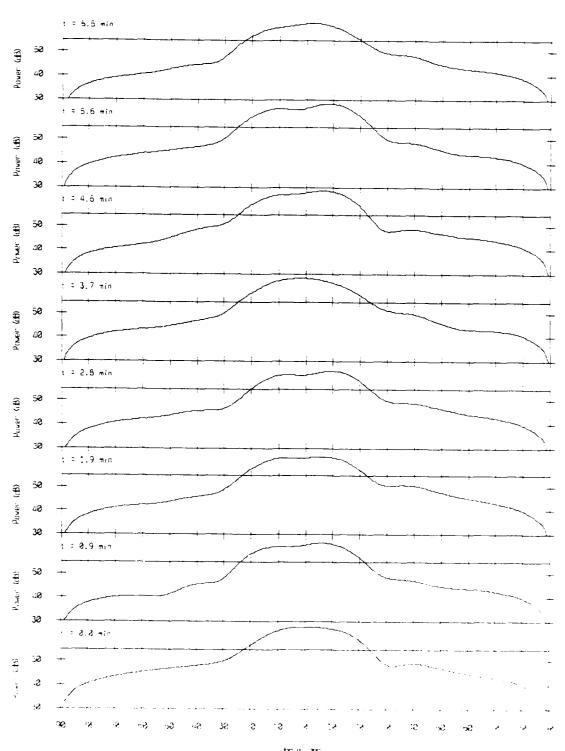


Annay Response - 86180 3:n #4445 f = 50 -z. <8 window (d.ana = 1.5)

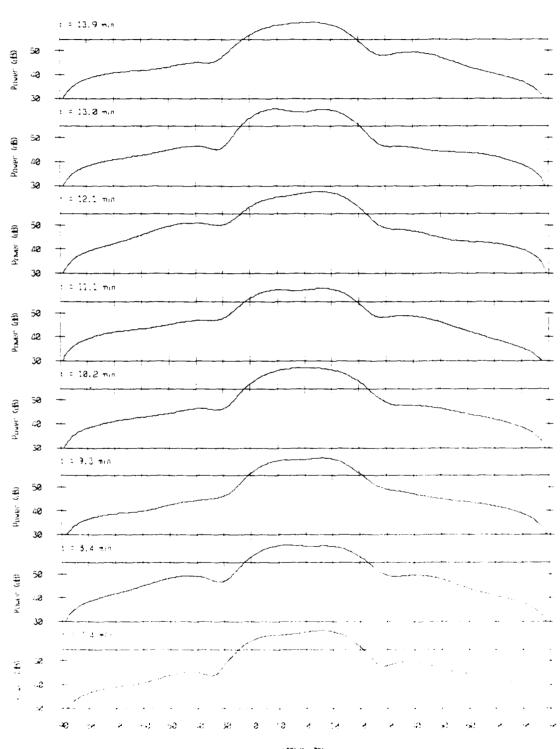


Priory Response - 86180 Bin #4619 î = 75 mz, KB window (dicha = 1.5)

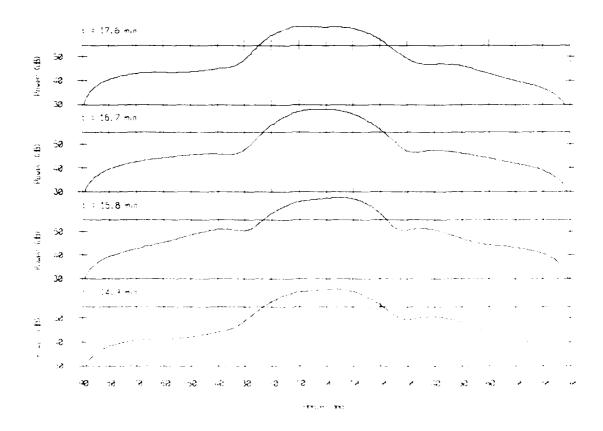
CONTRACTOR OF THE SECOND SECON



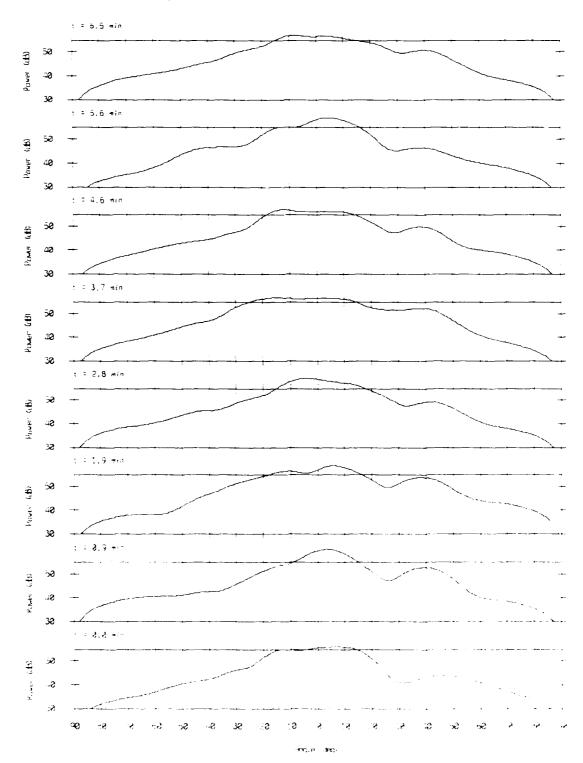
Annay Response - 86188 3in #4619 f = 75 mz, KB window (clara = 1.5)



Annay Response - 86182 Bin #4619 f = 75 -z, <B window (d.pnc = 1.5)



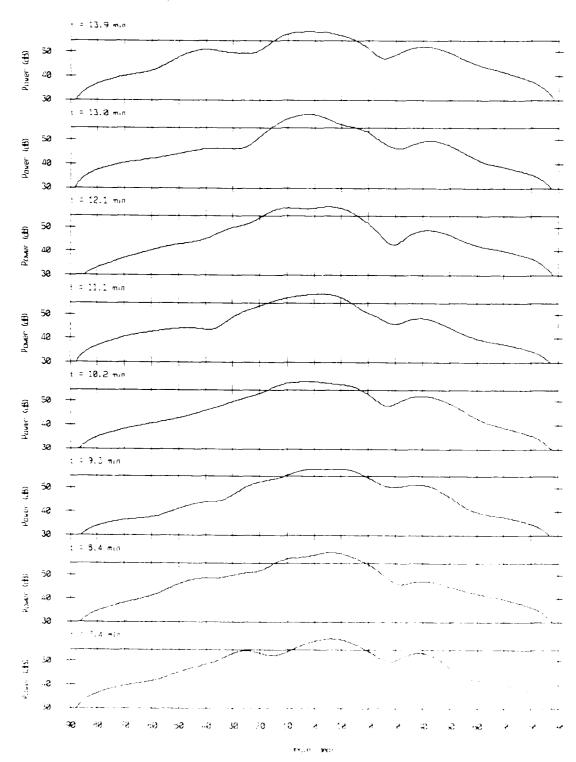
Annay Response - 86180 3in #4793 f = 120 mz, K5 wineow (alone = 1.5)



REPERTOR PROSESSOR PRODUCED BESSELS LICENSESS

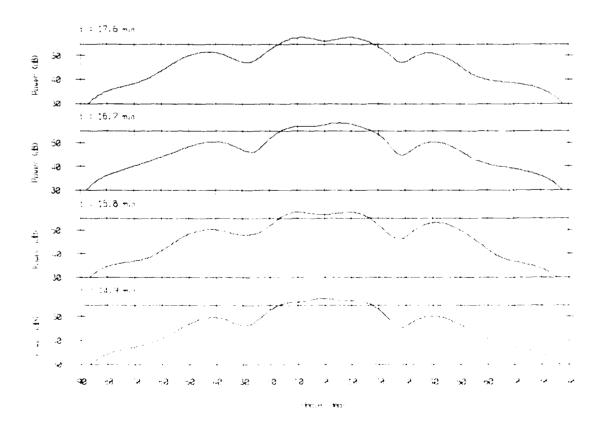
SECTION TO LEGISLA DESCRIPTION

Annay Response - 86180 3th #4793 f = 120 mz, KB window (alone = 1.5)



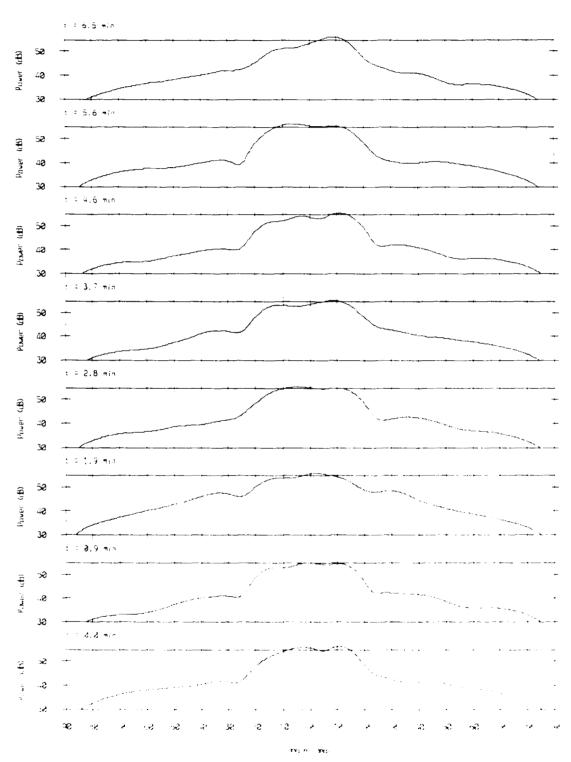
Annay Response - 86180 3:h #4793 E = 120 - z, KS window (blond = 1.5)

derver someth bestept bettered bettered by

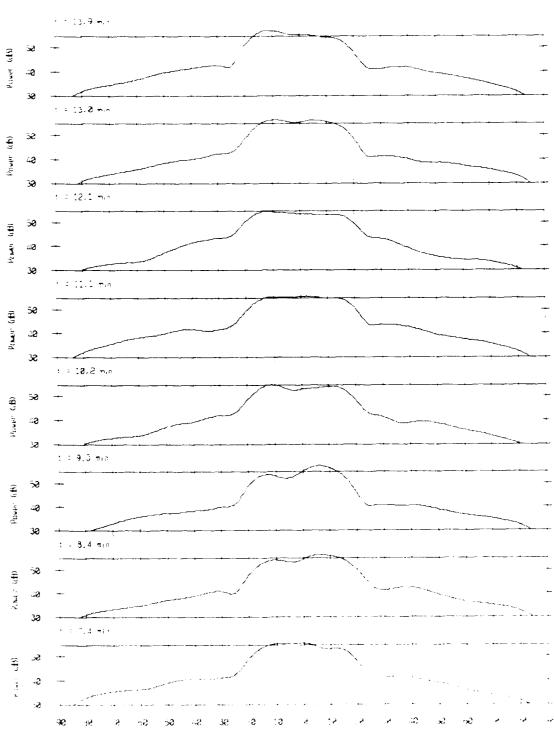


Annay Response - 86182 3in #4967 0 = 125 mz. K8 window (along = 1.5)

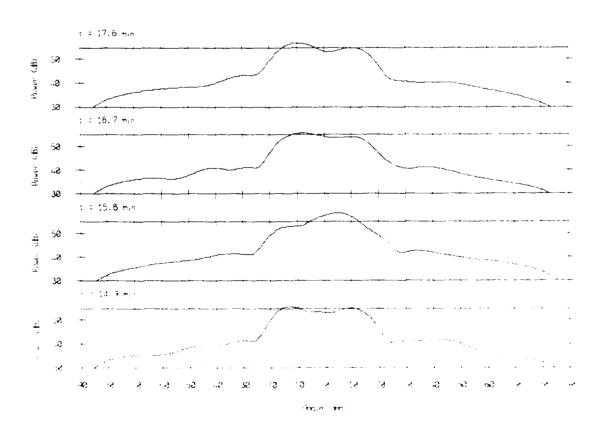
SERVICE PROPERTY VALUE OF SERVICES CONTRACTOR CONTRACTOR



Annay Response - 8518% 3th #4967 E = 125 mz, K8 window Guena - 1 5.

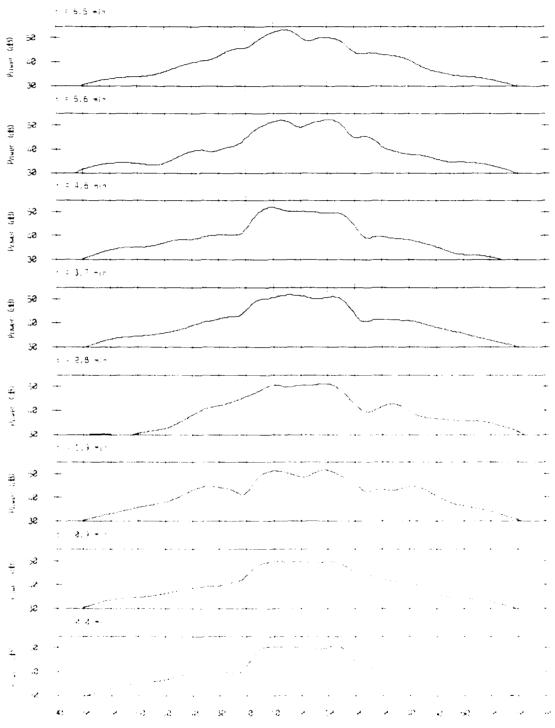


Annay Response - 86180 3:n #4967 F = 125 -z, K3 window (blanc = 1.5)

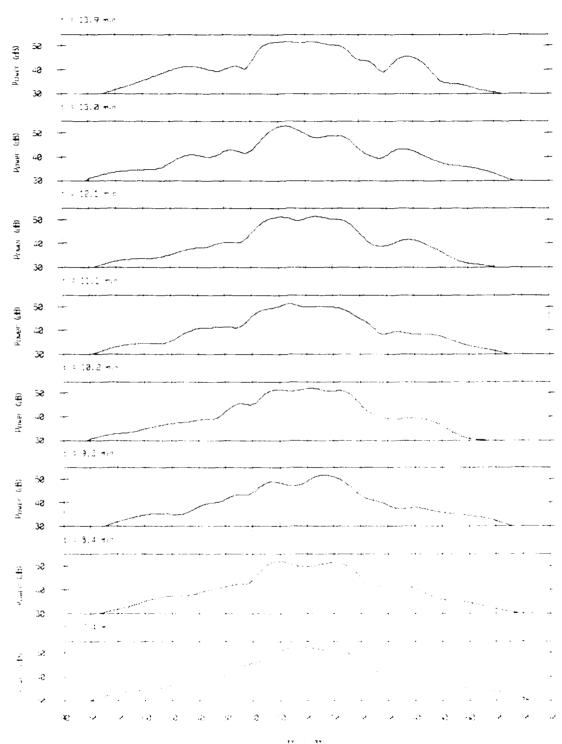


KARATANA MARKATAN MARKATAN MARKATAN

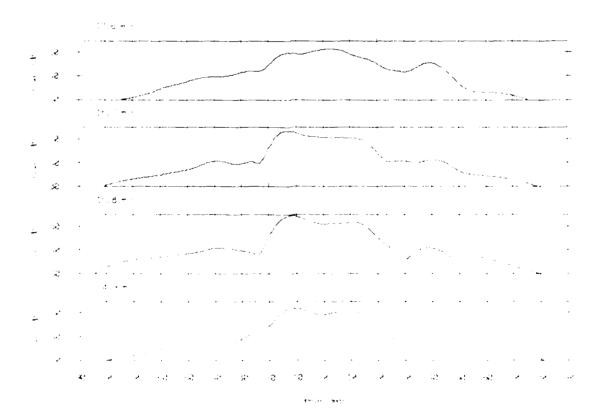
Annay Response - 86180 3in #5141 E = 150 mz, K8 window (along = 1 5)



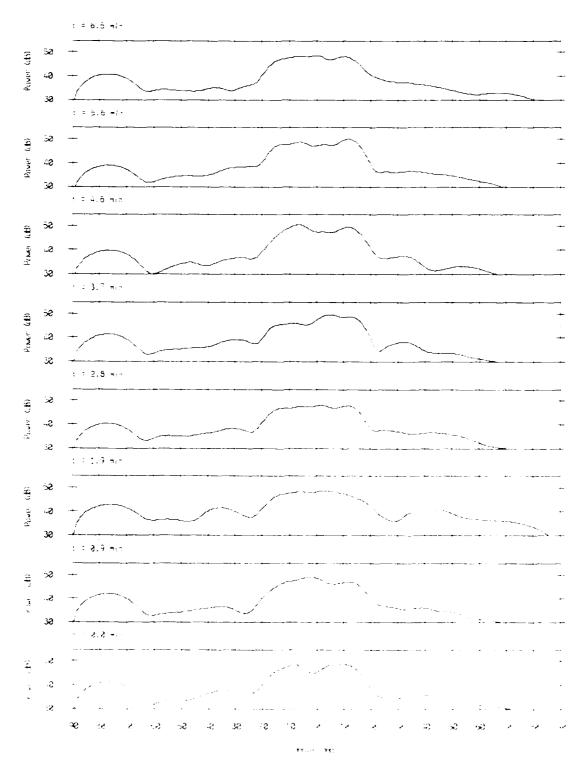
Annay Response - 86180 3:h #5141 $f \approx 150$ -z, K5 window (alona = 1.5)



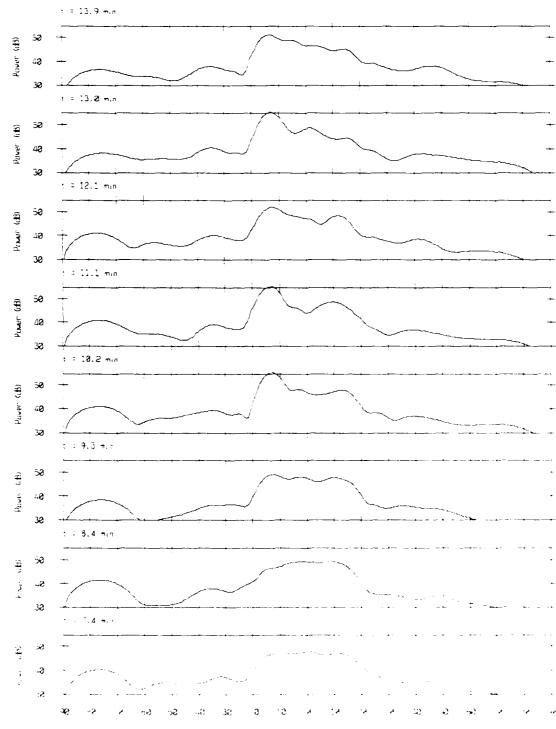
Annay Response - 86180 Bin #5141 F = 152 -z, KB window (alana = 1.5)



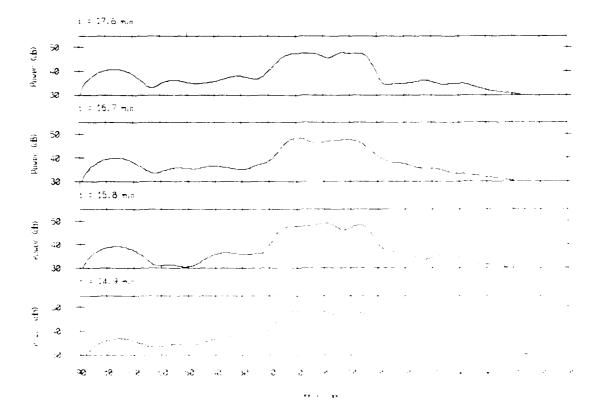
Annay Response - 86180 3:n #5316 E = 175 -z, KS window Glena = 1.5.



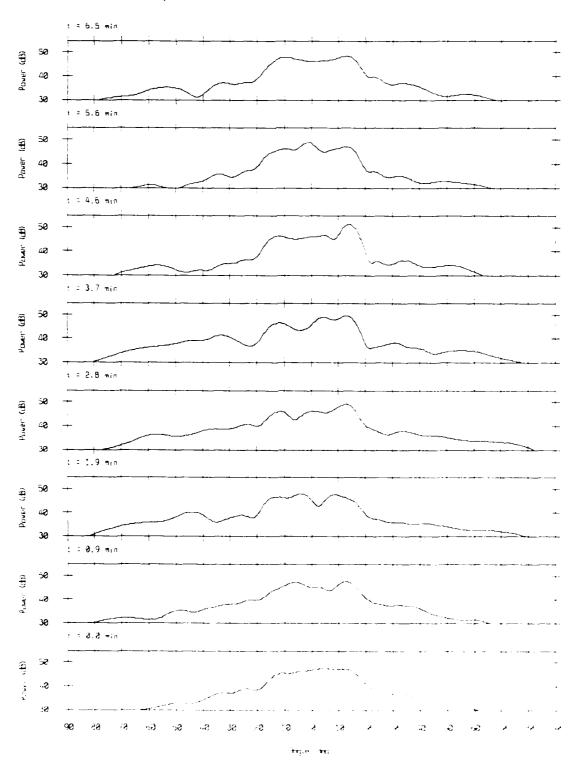
Annay Response - 86180 Bin #5316 f = 175 mz, <B window (alpha = 1.5)



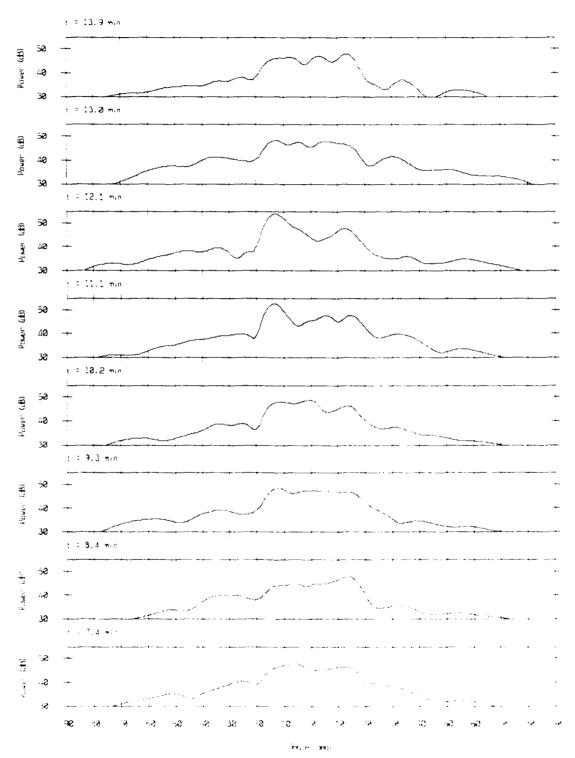
Array Response - 86180 Bin #5316 $f = 175 \, Hz$, KB window (alone = 1.5)



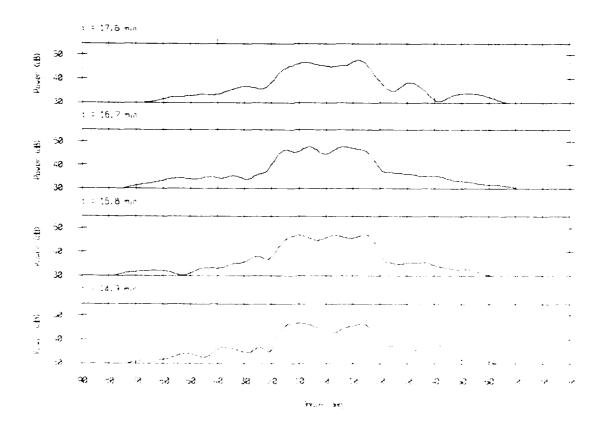
Annay Response - 86180 3:- *5490 f = 200 Hz, K5 window (alone = 1.5)



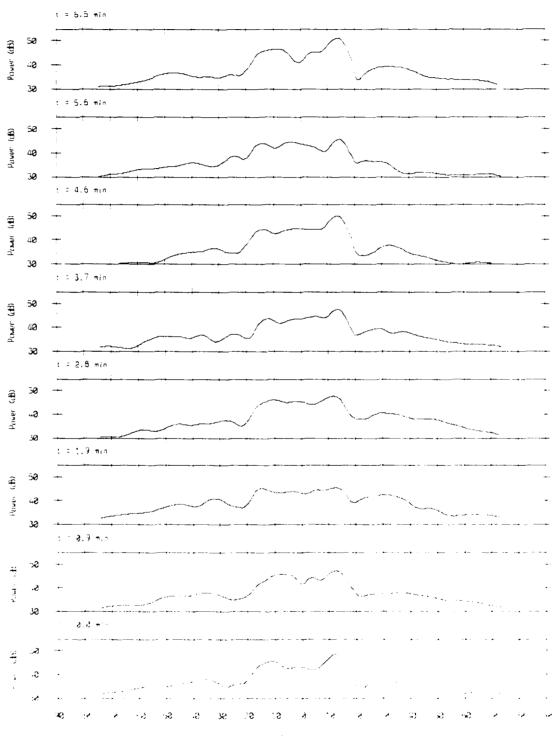
Annay Response - 86180 3in #5492 f = 200 Hz, KS window (a)pna = 1 5%



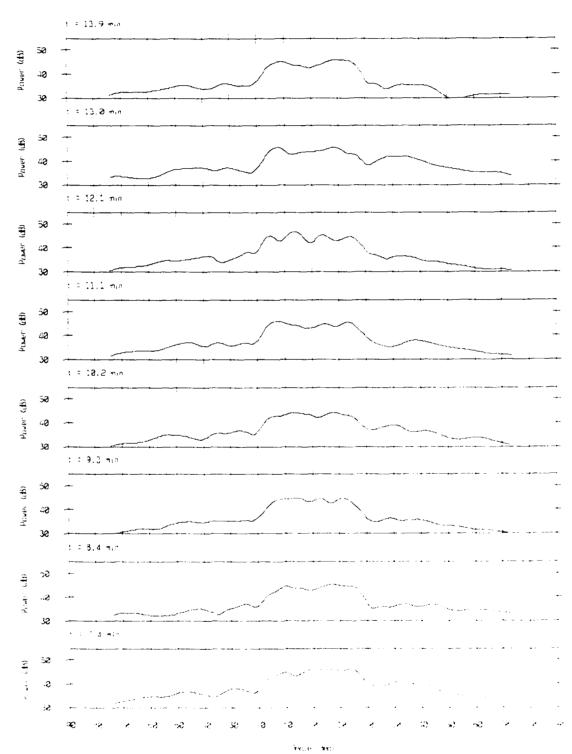
Annay Response - 86180 Bin #5490 f = 200 Hz, KB window (alpha = 1.5)



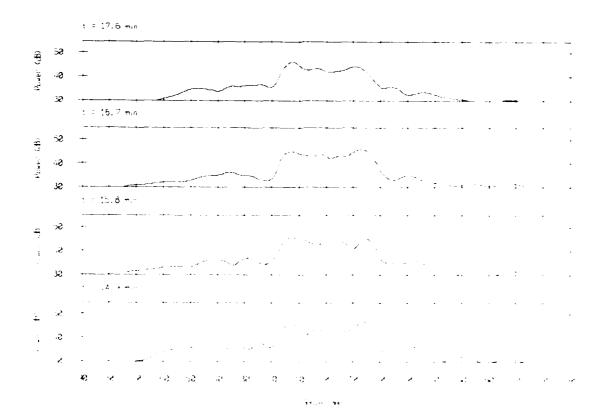
Annay Response - 86180 Bin #5664 f = 225 Hz, KB window (alona = 1.5)



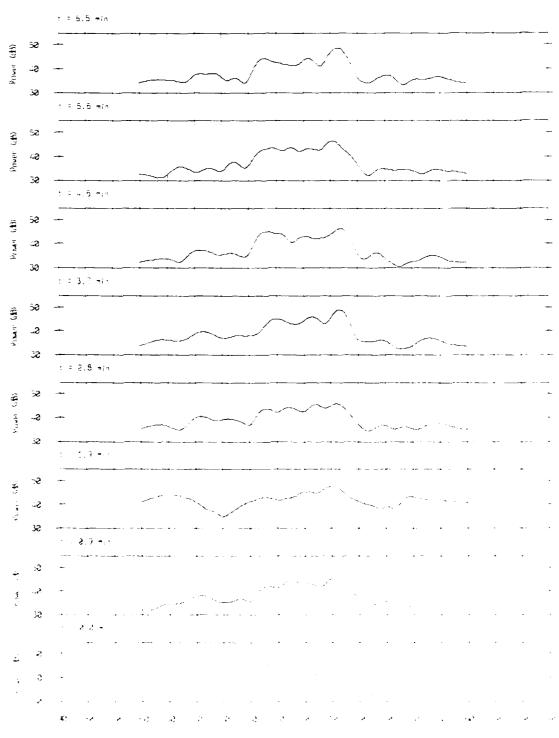
Annay Response - 86180 Bin #5664 f = 225 -z, KB window (alana = 1.5)



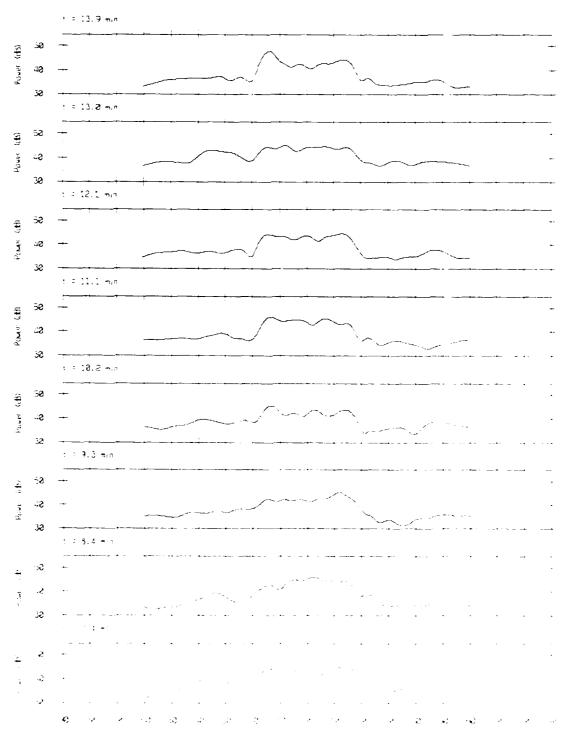
Annay Response - 86180 3in #5664 f = 225 Hz, KB window (alona = 1.5)



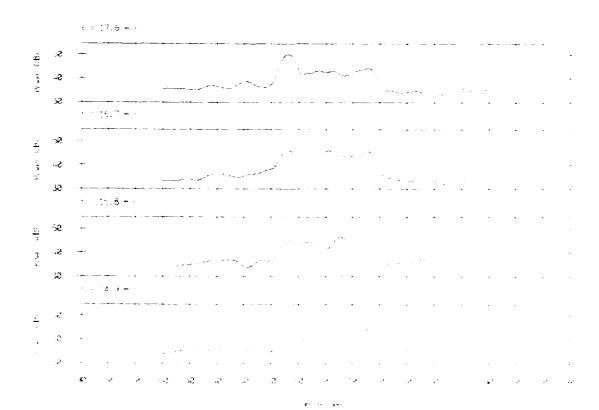
Annay Response - 86180 Bin #5832 6 = 250 Hz, KS window (alana = 1.5)



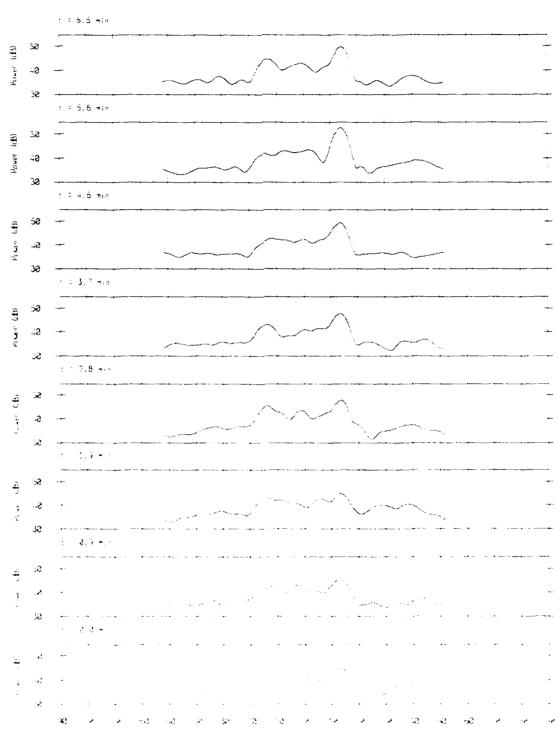
Annay Response - 86180 3in #5832 f = 250 Hz, KB window (alone = 1.5)



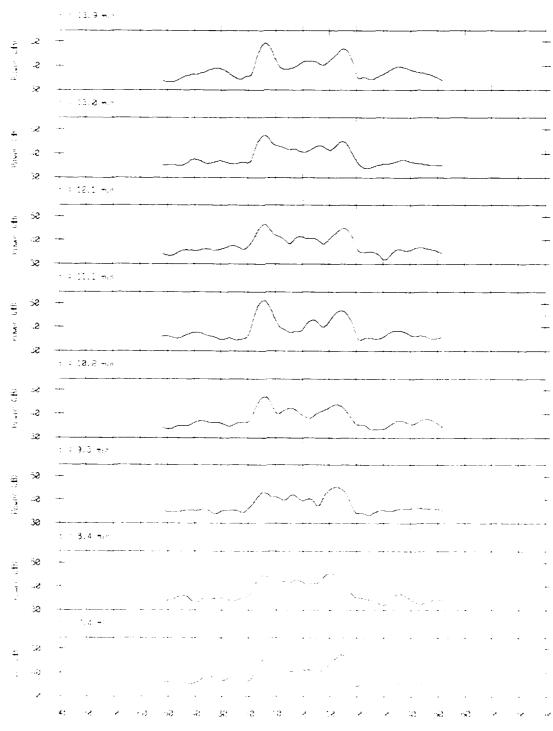
Annay Response - 86182 3th #6832 f = 252 -z, K3 window (blanc = 1 6



Annay Response - 86180 3in #6012 i = 275 - z, K3 window (along = 1.5)

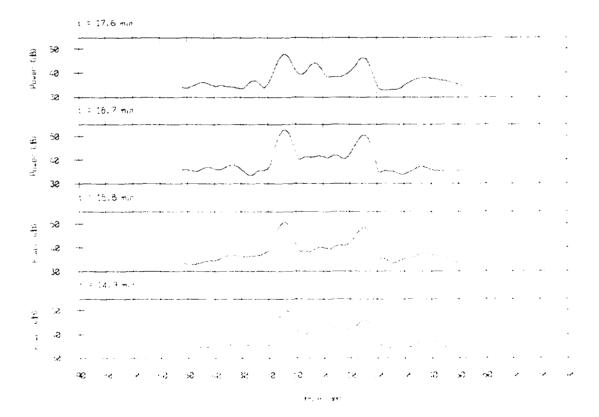


Annay Response - 86180 Bin #6012 $\dot{z} = 275$ -z, KB window (slong = 1.5)

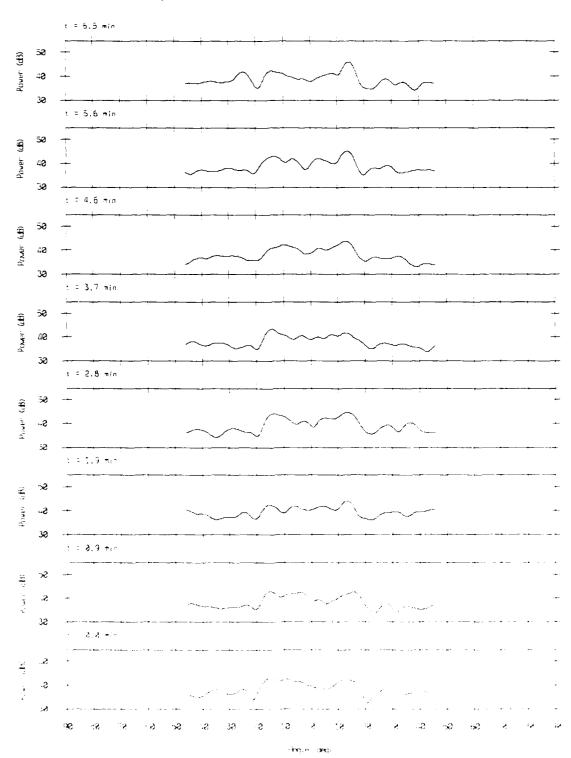


Annay Response - 86180 3:n #6012 f = 275 + z, KB window (alona = 1.5)

general processors of the consistency of the consis

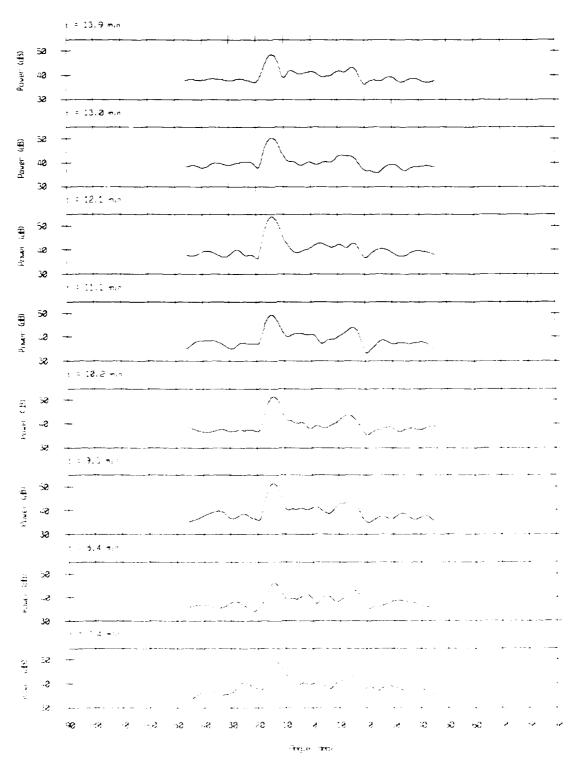


Array Response - 86180 3:n #6186 $\hat{z} = 300 \text{ Hz}$, KB window (alpha = 1.5)

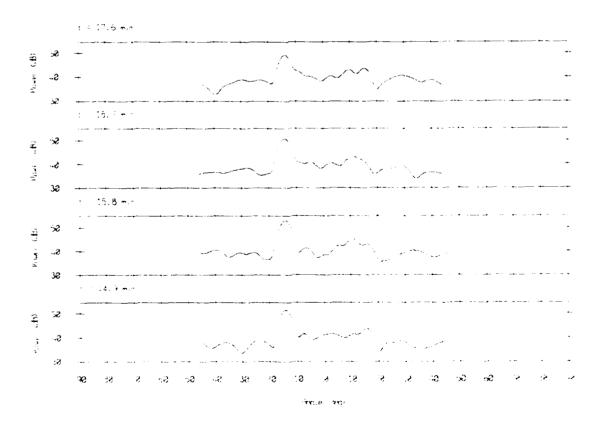


VIEDZIE VANDONI. RIKONOVIE ISRANJONI MIRIKKIKA VANDOVAL ISRSENJON PONDOVINO KOLSKOVO PORZEZEKO PIEŻEŻ

Annay Response - 86180 3:n #6186 f = 300 Hz, KB window (alcha = 1.5)

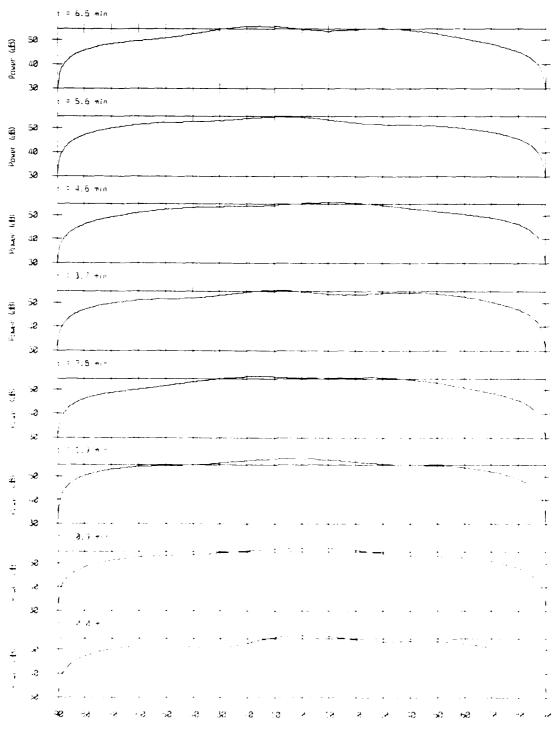


Array Response - 86180 Bin #6186 f = 300 Hz, KB window (alone = 1.5)

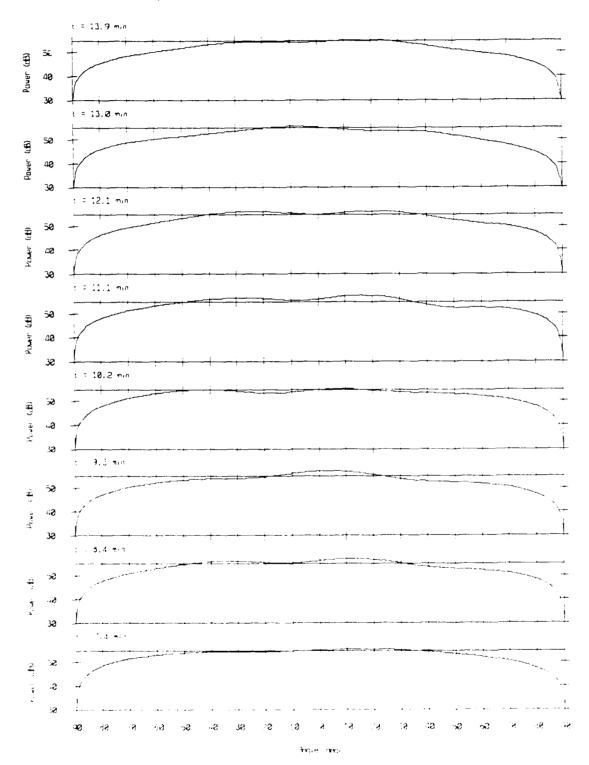


VII. Array Response: Panels, Rect Window.

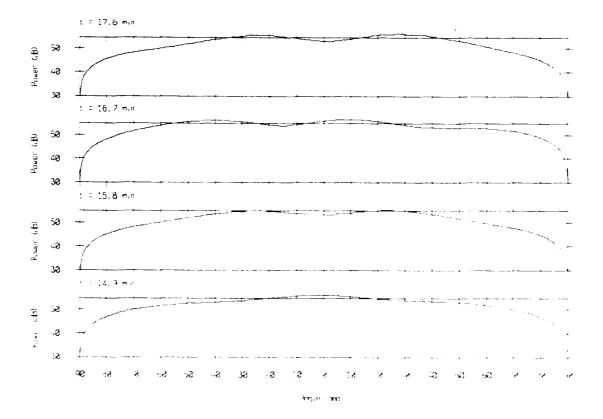
Array Response - 86180 Bin #4271 { = 25 mz, rect window



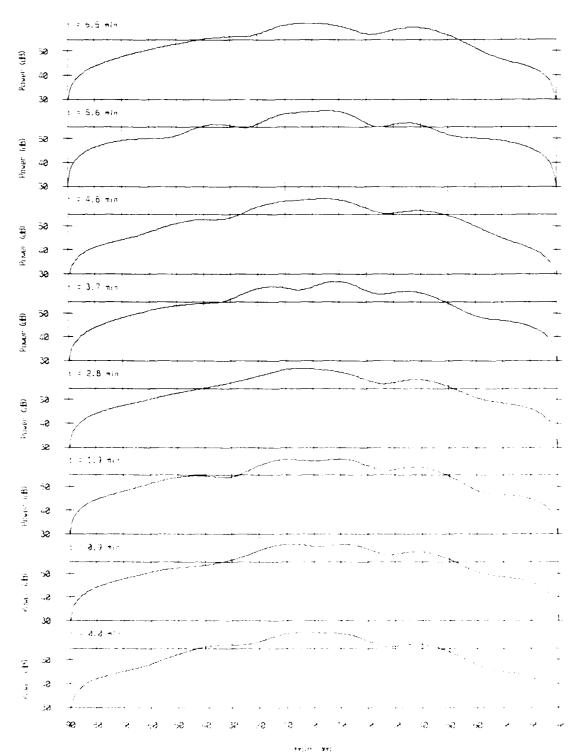
Annay Response - 86180 3in #4271 f = 25 Hz, neat window



Array Response - 86180 Bin #4271 f = 25 Hz, nest window

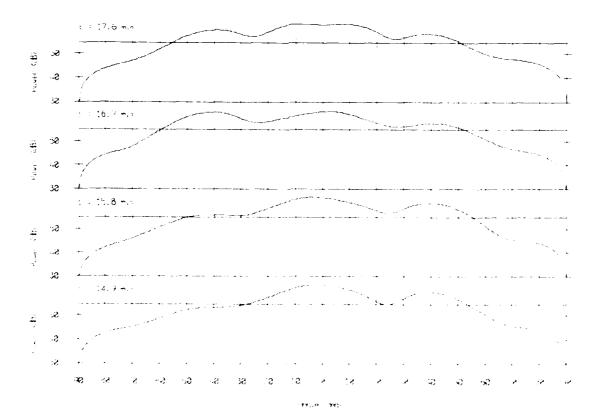


Annay Response - 86180 3:h #4445 f = 50 Hz. nept window

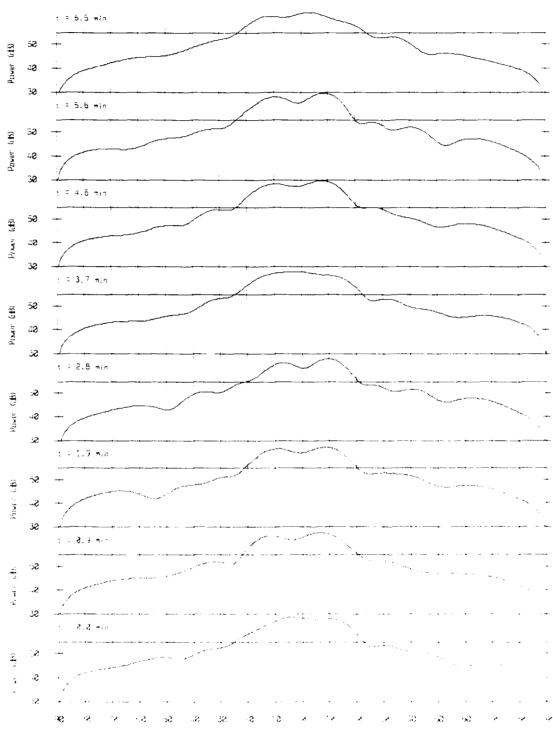


Annay Response - 86180 315 #4445 £ = 50 mz. neat window t = 13.9 min t = 13.0 min Рамег 40 30 t = 12.1 mun Power (13) 49 30 t = 11.1 min Power (dB) 58 40 38 : : 18.2 min ാ : 3.3 min ..3 .:2

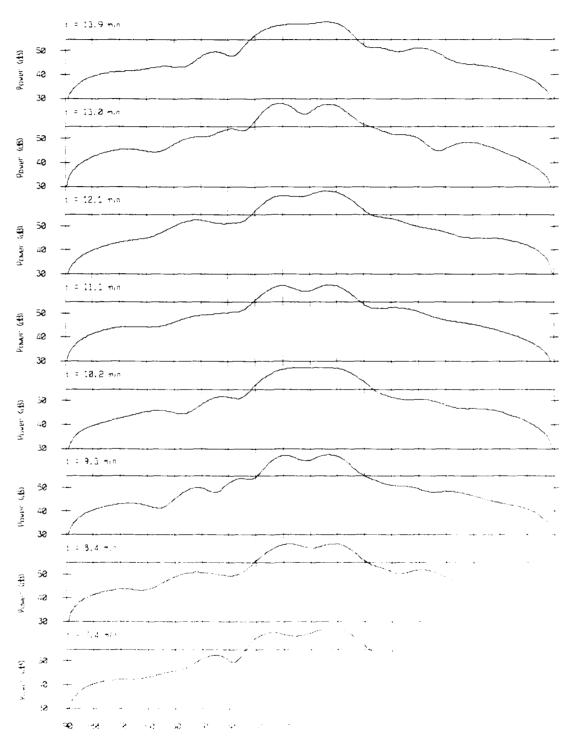
CONTRACT CONTRACT CONTRACT CONTRACT CONTRACT

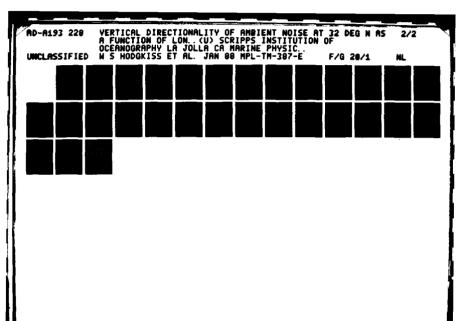


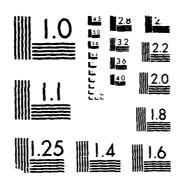
Array Response - 86180 3in #4619 f = 75 -z, nect window



Array Response - 86180 Bin #4619 f = 75 Hz, neat window

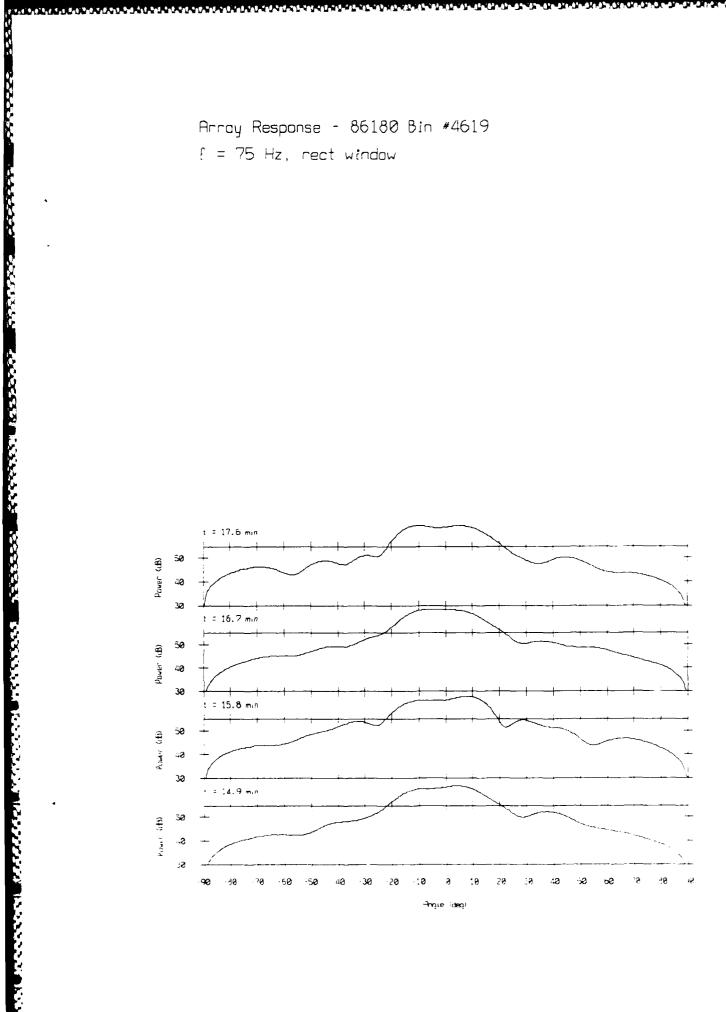




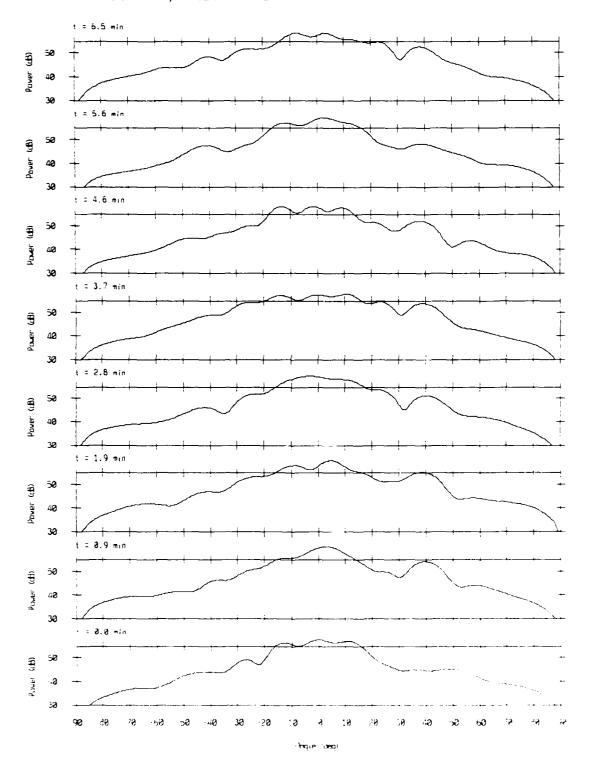


MICROCOPY RESOLUTION TEST CHART

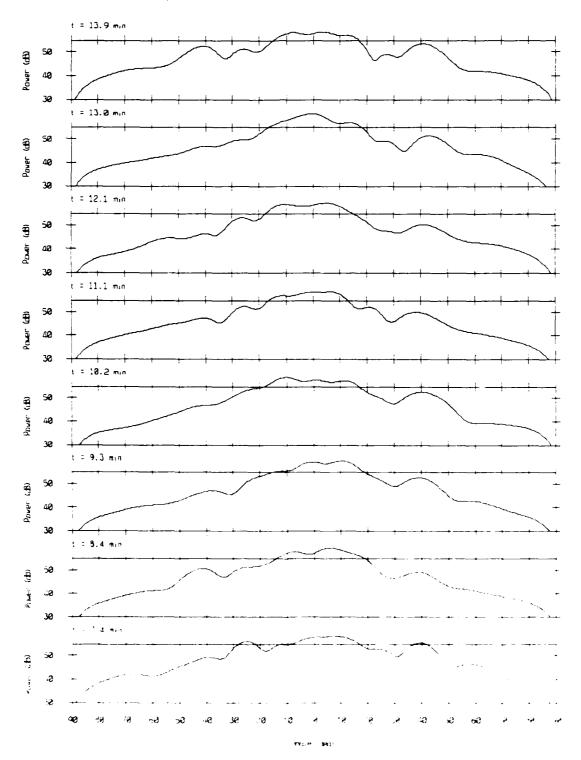
Array Response - 86180 Bin #4619 f = 75 Hz, rect window



Array Response - 86180 Bin #4793 f = 100 Hz, rect window

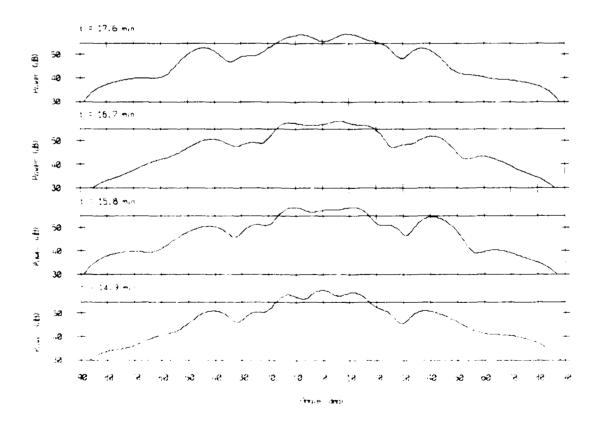


Array Response - 86180 Bin #4793 f = 100 Hz, rect window

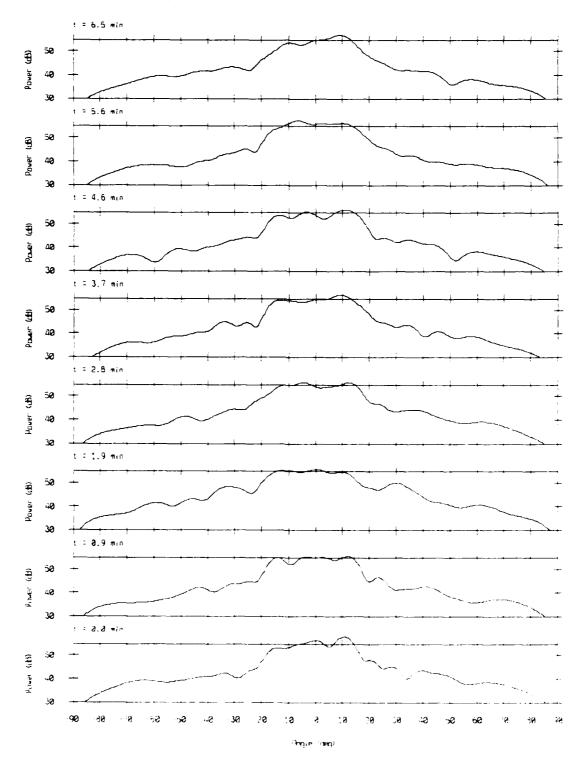


Array Response - 86180 Bin #4793 f = 100 Hz, rect window

respected to the second of the second second



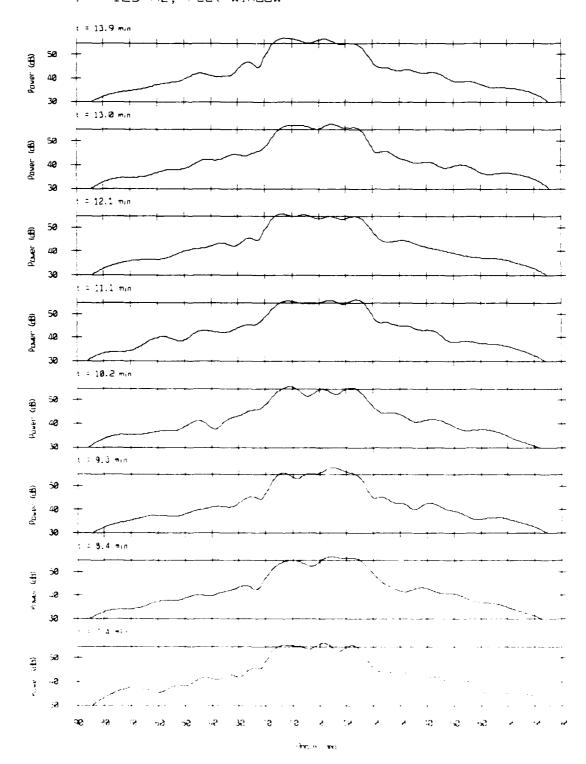
Array Response - 86180 Bin #4967 f = 125 Hz, rect window



Array Response - 86180 Bin #4967 ! = 125 mz, rect window

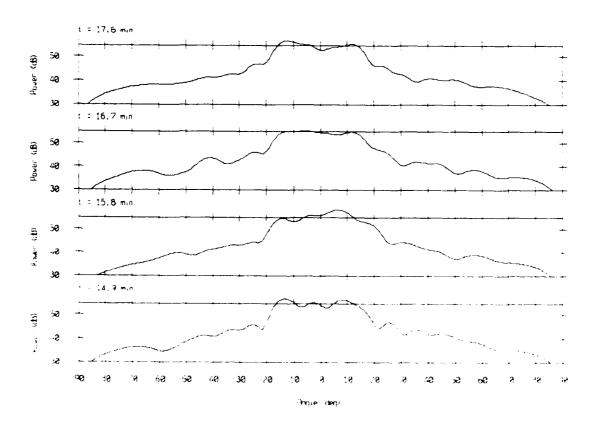
PERSONAL PROPERTY SOCIETY PROGRAMME

STATE OF THE PROPERTY OF THE STATE OF THE ST

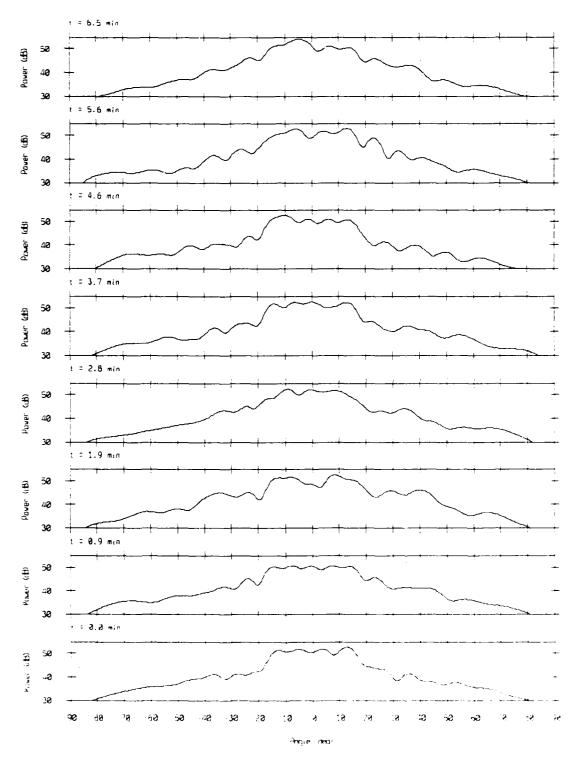


LOCKED BALLOSO CONSTROL BALLOSO

PROPERTY OF SERVICES INTERPOSED TO THE PROPERTY OF THE PROPERT

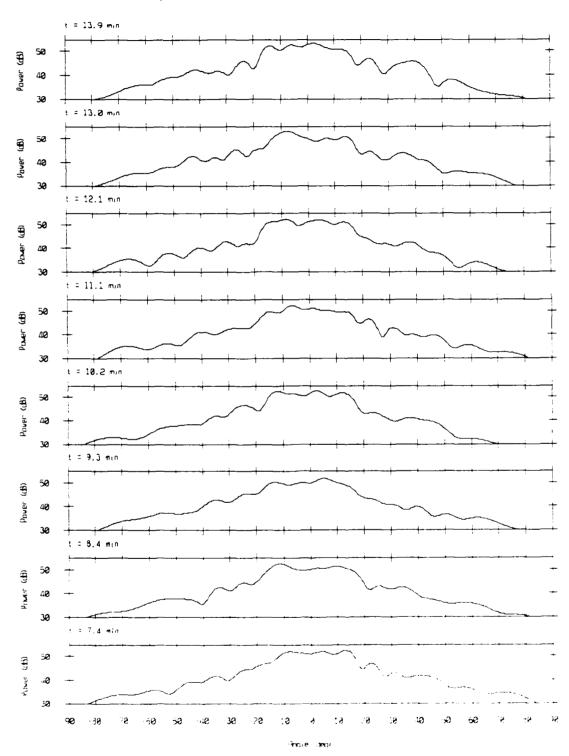


Array Response - 86180 Bin #5141 f = 150 Hz, rect window



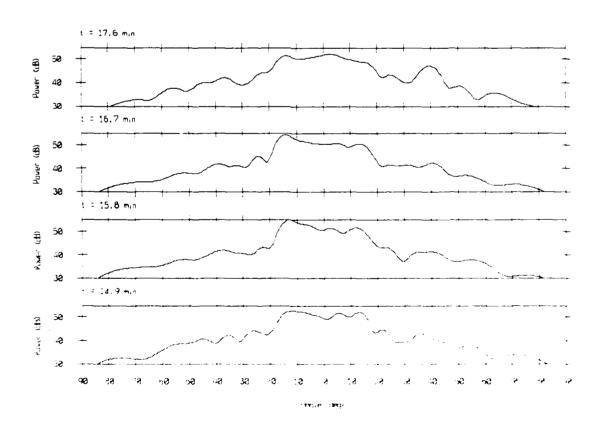
HANDON COCCUMENTATIONS TO THE COCCUMENTATION OF THE COCCUMENTATION

Array Response - 86180 Bin #5141 f = 150 Hz, rect window



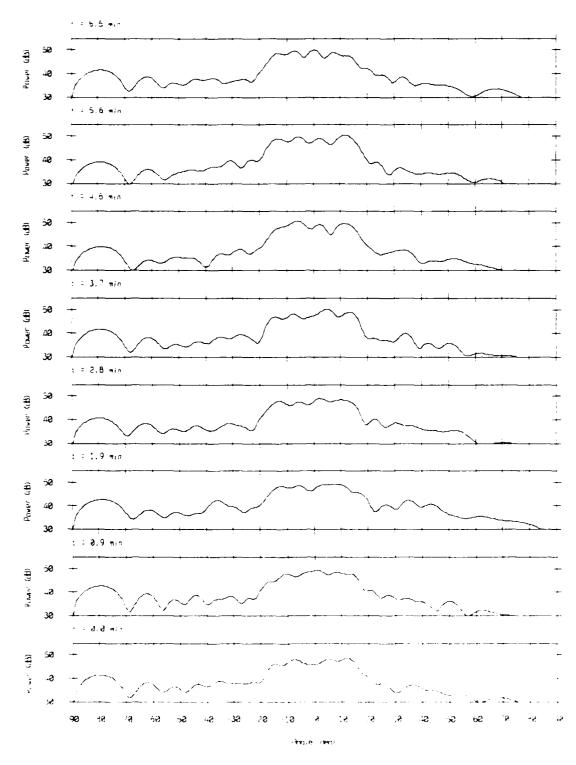
Array Response - 86180 Bin #5141 f = 150 Hz, rect window

PERFERENCE PERSONAL PROPERTY P

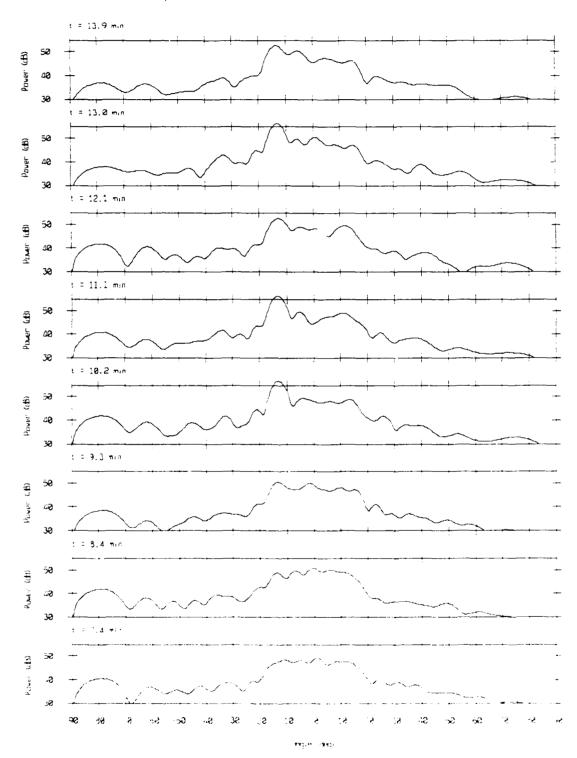


Annay Response - 86180 Bin #5316 f = 175 - z, nect window

CONTRACTOR CONTRACTOR PRODUCT PROGRESS CONTRACTOR CONTR

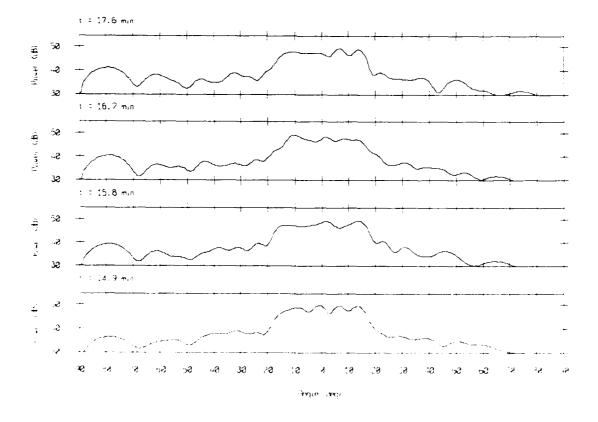


Array Response - 86180 Bin #5316 $f = 175 \, Hz$, rect window

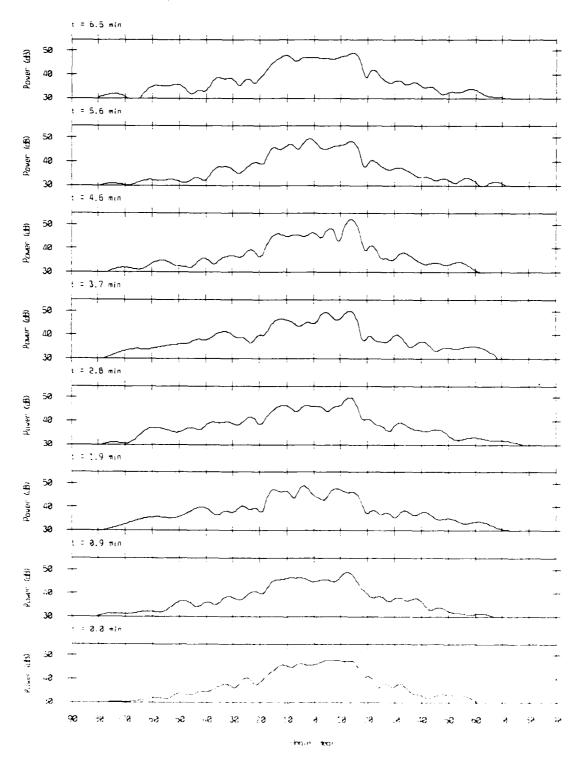


PERFORMANCE STANDARD STANDARD

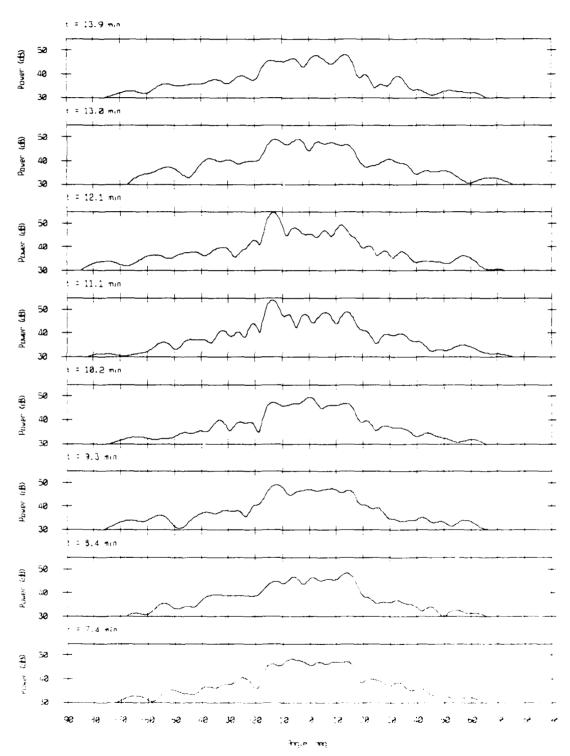
Array Response - 86180 Bin #5316 f = 175 Hz, rect window



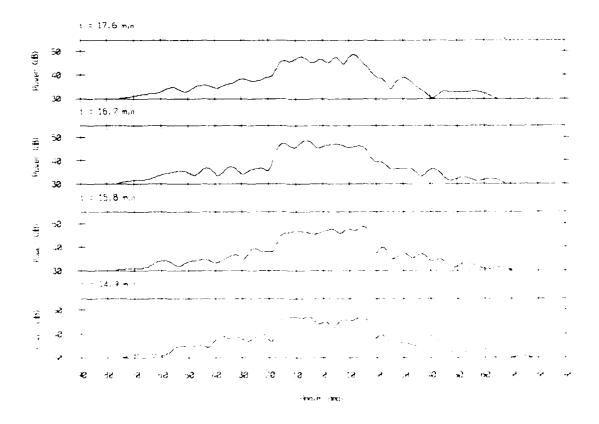
Array Response - 86180 Bin #5490 £ = 200 Hz, rect window



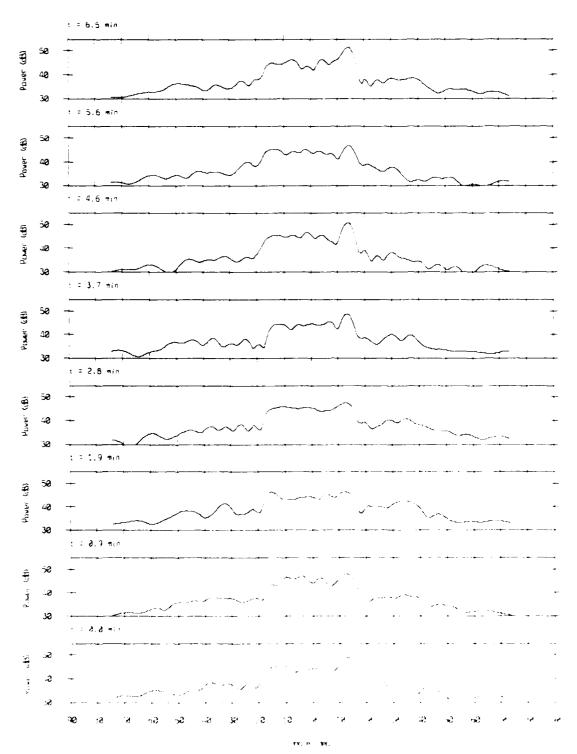
Array Response - 86180 Bin #5490 f = 200 Hz, rect window



e Proce recourse conserve sylvery species insissions reposition previous procession between the species of the process of the species of the

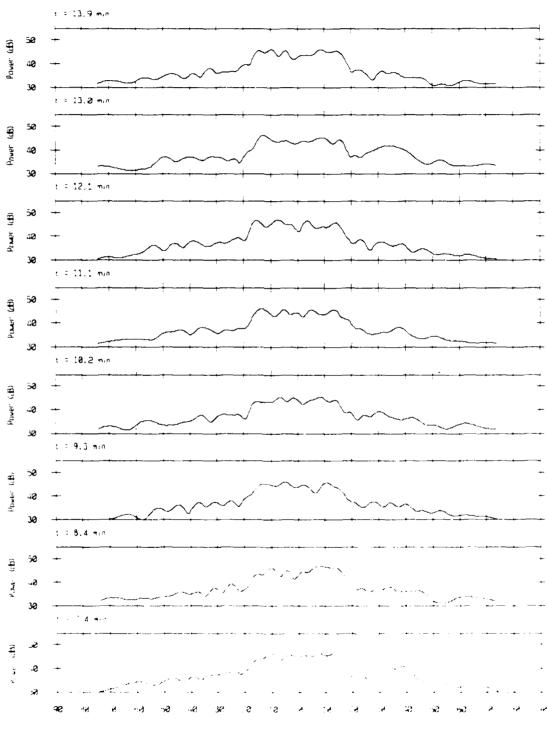


Array Response - 86180 Bin #5664 $f = 225 \, \text{Hz}$, rest window



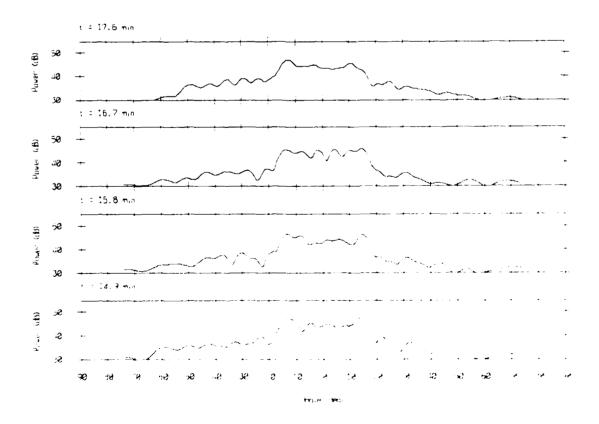
ADDIKSSONSON DEEKEEKEINDOOODDIN MASSONOON HEGISSOON DEFENSOON

Annay Response - 86180 Bin #5664 f = 225 Hz, nect window

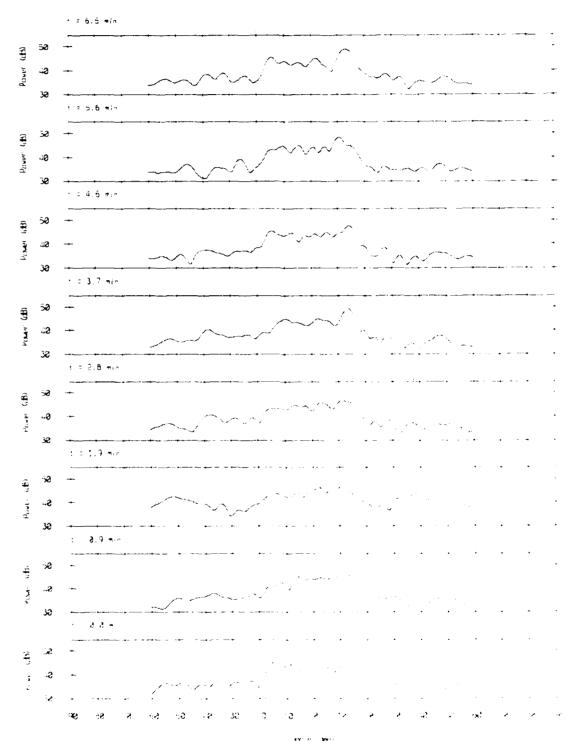


COCCUSAN CONTRACTOR WOOLGES WAS ALLE BOOKS WINDOWN WINDOWS PROPERTY OF THE PRO

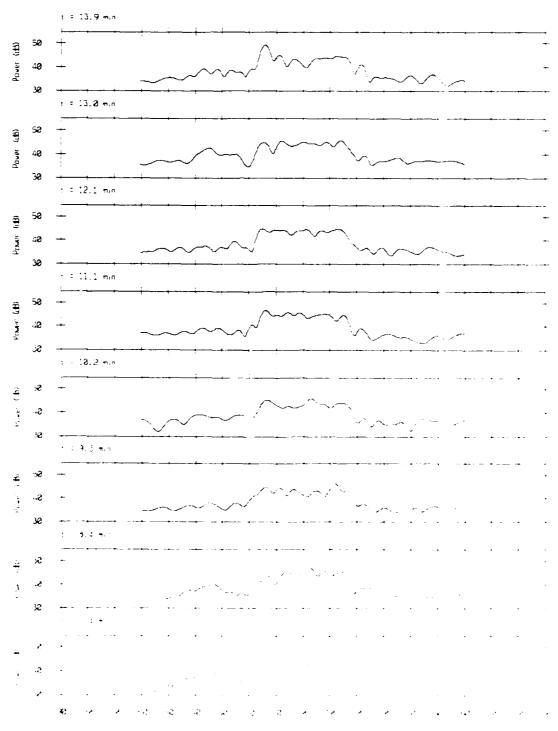
THE PROPERTY OF THE PROPERTY O



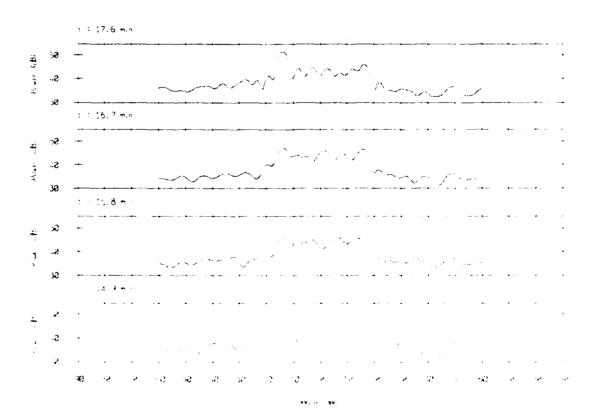
Annay Response - 86180 3in #5832 $f = 250 \, \text{Hz}$, neat window



Array Response - 86180 Bin #5832 f = 250 Hz. rest window

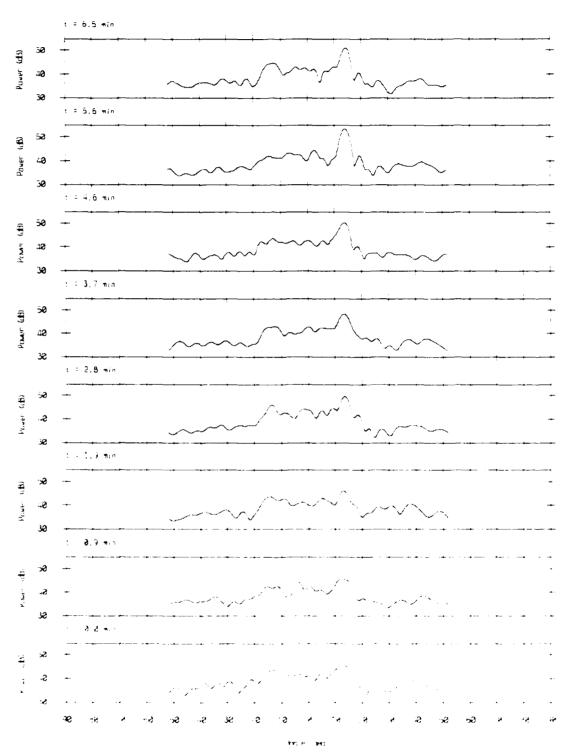


and assistant assistant designation accepted propher paradocal propher accepted accepted accepted assistant by

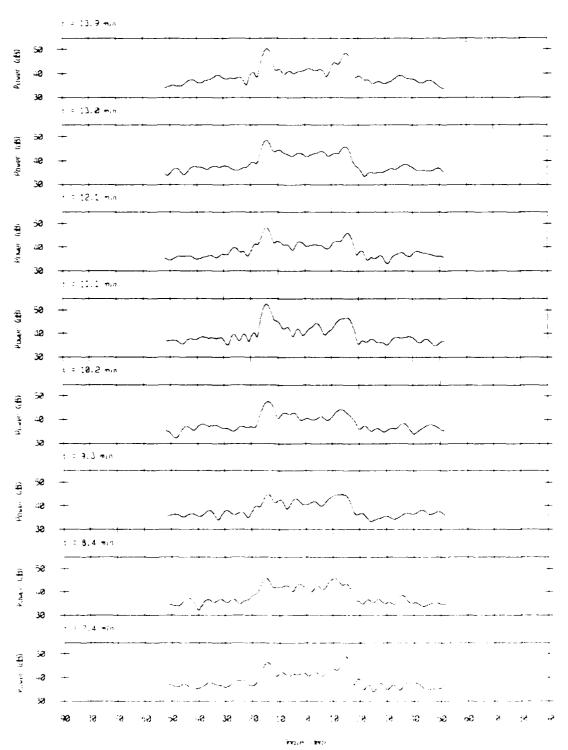


Array Response - 86180 Bin #6012 f = 275 Hz, nest window

the process of the pr

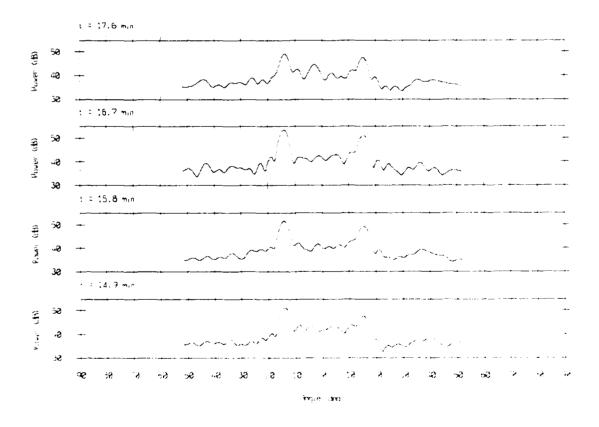


Array Response - 86180 3in #6012 f = 275 -z. nest window

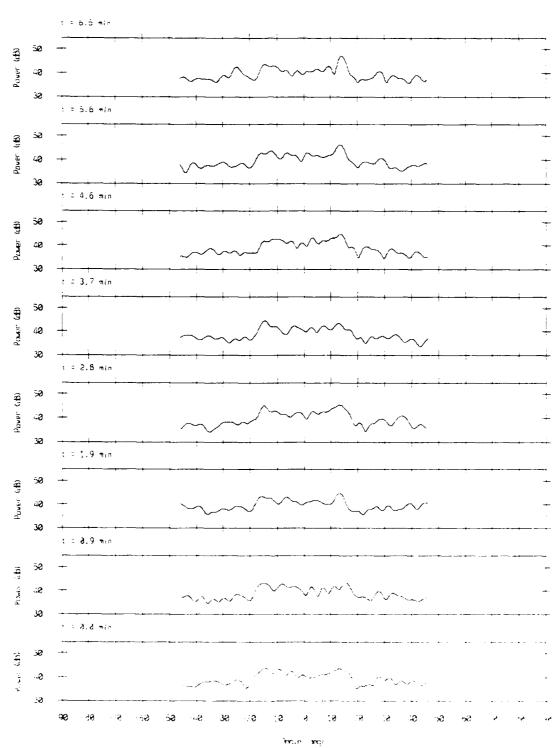


Array Response - 86180 3in #6012 f = 275 Hz, nect window

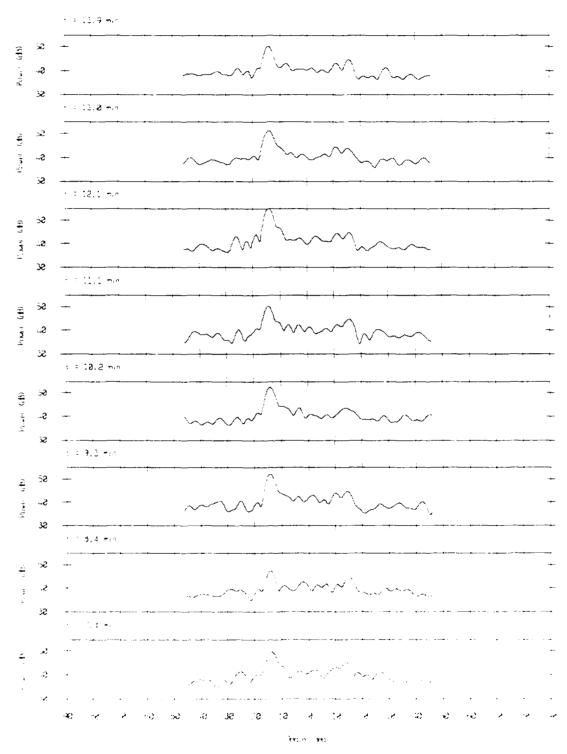
A CESSESSES AND SOURCE OF SECURITIONS OF SOURCE SOURCES SOURCESSES SOURCE SOURCE SOURCE SOURCES



Array Response - 86180 Bin #6186 f = 300 -z, nect window



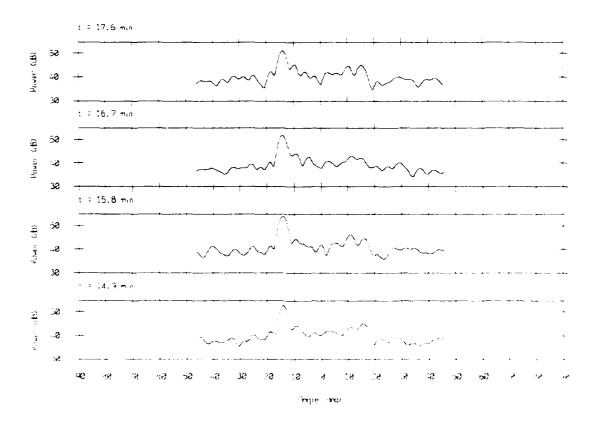
Annay Response - 86180 3in #6186 i = 380 Hz, nest window



Paradora decessor cossessor paradoras sissabababa

Array Response - 86180 Bin #6186 f = 300 Hz, nect window

ed possesso recesses becomes encountry recesses research research possess. Indicate processes recessors and



END DATE FILMED DTIC July 88